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Section XIX
Miscellaneous

BASF PLASTICS: ULTRADUR Poly(butylene terephthalate) (PBTP):

The ULTRADUR resins are molding compounds derived from poly (butylene terephthalate) (PBT).
The salient features of ULTRADUR are as follows:

- Great rigidity and strength
- High resistance to heat distortion
- Low water absorption
- Good dimensional stability
- Good toughness even at subzero temperatures
- Favorable tribological properties
- Good dielectric properties
- Good resistance to many chemicals
- No tendency to environmental stress cracking
- Good outdoor performance and resistance to high-temperature aging
- Can be readily flameproofed
- Presents no problems in processing
- High gloss and great hardness
- Minimum discoloration at elevated service temperatures

Unreinforced:

B2550:
Features:
Abbreviation: PBT
Processing technique: Coating
Density: g/cm 3: 1.30
Melting point/range: F: 428-437
Viscosity code: 10
Moisture absorption at 73F, 50% RH: %: 0.25
Water absorption at 73F: %: 0.5
Physical form:
Granules: X
Coloration:
Natural color: X
Processing:
Mold shrinkage:
- Flow direction: in./in. x 10 3: 11-22
- Cross flow direction: in./in. x 10 3: 11-22

Extrusion:
Coating: 445-554
Applications:
Heat-resistant coatings on paper and board for packaging oven-ready deep-freeze and convenience foods

BASF PLASTICS: ULTRADUR Poly(butylene terephthalate) (PBTP) (Continued):

Unreinforced(Continued):

B 4500:
Features:
Abbreviation: PBT
Processing technique: Injection molding
Density: g/cm 3: 1.30
Melting point/range: F: 428-437
Viscosity code: 12/14
Moisture absorption at 73F, 50% RH: %: 0.25
Water absorption at 73F: %: 0.5
Physical form:
Granules: X
Coloration:
Natural color: X
Processing:
Mold shrinkage:
- Flow direction: in./in. x 10 3: 9-22
- Cross flow direction: in./in. x 10 3: 9-22

Recommended melt temperature: F: 473-518
Recommended mold temperature: F: 104-140
Applications:
Engineering parts, high-precision, tough and dimensionally stable; cams, number barrel mechanisms and poppet valves

B 4520:
Features:
Abbreviation: PBT
Processing technique: Injection molding
Density: g/cm 3: 1.30
Melting point/range: F: 428-437
Viscosity code: 12
Moisture absorption at 73F, 50% RH: %: 0.25
Water absorption at 73F: %: 0.5
Physical form:
Granules: X
Coloration:
Natural color: X
Colored: X
Specialty colorants: X
Black: X
Processing:
Injection molding:
Mold shrinkage:
- Flow direction: 11-22
- Cross flow direction: 11-22

Recommended melt temperature: F: 473-518
Recommended mold temperature: F: 104-140
Applications:
Chassis, housings and parts for household appliances and machines, office equipment and sewing machines, and coil formers

BASF PLASTICS: ULTRADUR Poly(butylene terephalate) (PBTP) (Continued):

Unreinforced(Continued):
B 4550:
Features:
Abbreviation: PBT
Processing technique: Extrusion/film extrusion
Density: g/cm 3: 1.30
Melting point/range: F: 428-437
Viscosity code: 12/14
Moisture absorption at 73F, 50% RH: %: 0.25
Water absorption at 73F: %: 0.5
Physical form:
Granules: X
Coloration:
Natural color: X
Processing:
Injection molding:
Mold shrinkage:
- Flow direction: in./in. x 10 3: 9-22
- Cross flow direction: 9-22
Extrusion:
Stock temperature: F: 445-536
Flat film: F: 445-536
Tubes/film: F: 445-536
Semi-finished articles: F: 445-536
Coating: F: 445-536
Applications:
Flat film for packing medicinal articles; sections; sheet; extruded stock for machining

KR 4036:
Features:
Abbreviation: PBT
Processing technique: Extrusion
Density: g/cm 3: 1.30
Melting point/range: F: 428-437
Viscosity code: 16
Moisture absorption at 73F, 50% RH: %: 0.25
Water absorption at 73F: %: 0.5
Physical Form:
Granules: X
Coloration:
Natural color: X
Processing:
Injection molding:
Mold shrinkage:
- Flow direction: in./in. x 10 3: 9-22
- Cross flow direction: in./in. x 10 3: 9-22
Recommended melt temperature: F: 482-518
Recommended mold temperature: F: 104-140
Extrusion:
Semi-finished articles: F: 445-536
Applications: Sections and extruded stock for machining

BASF CORP.: ULTRADUR Poly(butylene terephthalate) (PBTP) (Continued):

Impact Modified:
KR 4070:
Abbreviation: PBT-HI
Processing Technique: Injection Molding
Density: g/cm 3: 1.20
Impact modification: X
Melting point/range: F: 428-437
Melt volume index MVI 482/10 (F/kg): cm 3/10 min: 95-100
Moisture absorption at 73F, 50% RH: %: 0.16
Water absorption at 73F: %: 0.3
Physical form:
Granules: X
Coloration:
Natural color: X
Colored: X
Specialty colorants: X
Black: X
Processing:
Injection molding:
Mold shrinkage:
- Flow direction: in./in. x 10 3: 17-21
- Cross flow direction: in./in. x 10 3: 17-21
Recommended melt temperature: F: 482-518
Recommended mold temperature: F: 104-140
Applications:
Engineering parts with enhanced impact strength, housings and sport-gear, parts for automobiles
KR 4071:
Abbreviation: PBT-HI
Processing technique: Injection molding
Density: g/cm 3: 1.20
Impact Modification: X
Melting point/range: F: 428-437
Melt volume index MVI 482/10 (F/kg): cm 3/10 min: 45-50
Moisture absorption at 73F, 50% RH: %: 0.16
Water Absorption at 73F: %: 0.3
Physical form:
Granules: X
Coloration:
Natural color: X
Colored: X
Specialty colorants: X
Black: X
Processing:
Injection molding:
Mold shrinkage:
- Flow direction: in./in. x 10 3: 17-21
- Cross flow direction: in./in. x 10 3: 17-21
Recommended melt temperature: F: 482-518
Recommended mold temperature: F: 104-140
Applications: Parts for automobiles; with high impact resistance at very low temperatures.

BASF PLASTICS: ULTRADUR Poly(butylene terephthalate) (PBTP) (Continued):

With flame retardant:

B 4306:
Abbreviation: PBT
Processing technique: Injection molding
Density: g/cm 3: 1.45
Flame retardant: X
Melting point/range: F: 428-437
Viscosity code: 10
Moisture absorption at 73F, 50% RH: %: 0.25
Water absorption at 73F: %: 0.4
Physical form:
Granules: X
Coloration:
Natural color: X Colored: X
Specialty colorants: X Black: X
Processing:
Injection molding:
Mold shrinkage:
- Flow direction: in./in. x 10 3: 11-12
- Cross flow direction: in./in. x 10 3: 11-12
Recommended melt temperature: F: 473-518
Recommended mold temperature: F: 104-140
Applications:
Parts that have to conform to strict specifications on fire resistance, e.g. plug connectors, housings

B4406:
Abbreviation: PBT
Processing technique: Injection molding
Density: g/cm 3: 1.45
Flame Retardant: X
Melting point/range: F: 428-437
Viscosity code: 10/12
Moisture absorption at 73F, 50% RH: %: 0.25
Water absorption at 73F: %: 0.4
Physical form:
Granules: X
Coloration:
Natural color: X Colored: X
Specialty colorants: X Black: X
Processing:
Injection molding:
Mold shrinkage:
- Flow direction: in./in. x 10 3: 11-12
- Cross flow direction: in./in. x 10 3: 11-12
Recommended melt temperature: F: 473-518
Recommended mold temperature: F: 104-140
Applications: Parts that have to conform to strict specifications on fire resistance, e.g. housings, plug connectors

BASF PLASTICS: ULTRADUR Poly(butylene terephthalate) (PBTP) (Continued):

Reinforced:

B 4300 G2:
Abbreviation: PBT
Processing technique: Injection molding
Density: g/cm 3: 1.37
Reinforcement/fillers: %: GF 10 glass fibers
Physical form:
Granules: X
Coloration:
Natural color: X Colored: X
Specialty colorants: X Black: X
Processing:
Injection molding:
Mold shrinkage:
- Flow direction: in./in. x 10 3: 8-10
- Cross flow direction: in./in. x 10 3: 10-12

Recommended melt temperature: F: 473-518
Recommended mold temperature: F: 176-212
Applications: Engineering parts; rigid, tough, dimensionally stable; e.g. program switches, cams, thermostatically controlled parts, toggles, press-buttons, and handles for cookers, toasters, grills

B 4300 G4:
Abbreviation: PBT
Processing technique: Injection molding
Density: g/cm 3: 1.45
Reinforcement/fillers: %: GF 20 glass fibers
Melting point/range: F: 428-437
Viscosity code: 10/12
Moisture absorption at 73F, 50% RH: %: 0.20
Water absorption at 73F: %: 0.4
Physical form:
Granules: X
Coloration:
Natural color: X Colored: X
Specialty colorants: X Black: X
Processing:
Injection molding:
Mold shrinkage:
- Flow direction: in./in. x 10 3: 6-8
- Cross flow direction: in./in. x 10 3: 7-9

Recommended melt temperature: F: 473-518
Recommended mold temperature: F: 176-212
Applications: Engineering parts; rigid, tough, dimensionally stable; e.g. car door handles, housings for motors in windscreen wash assemblies, headlamp housings assemblies, cams

BASF PLASTICS: ULTRADUR Poly(butylene terephthalate) (PBTP) (Continued):

Reinforced(Continued):

B 4300 G6:
Abbreviation: PBT
Processing technique: Injection molding
Density: g/cm 3: 1.53
Reinforcement/fillers: %: GF 30 glass fibers
Melting point/range: F: 428-437
Viscosity code: 10
Moisture absorption at 73F, 50% RH: %: 0.12
Water absorption at 73F: %: 0.3
Physical form:
Granules: X
Coloration:
Natural color: X Colored: X
Specialty colorants: X Black: X
Processing:
Injection molding:
Mold shrinkage:
- Flow direction: in./in. x 10 3: 3-5
- Cross flow direction: in./in. x 10 3: 5-7

Recommended melt temperature: F: 473-518
Recommended mold temperature: F: 176-212
Applications: Engineering parts, e.g. windscreen wiper brackets, consoles, contact units, bedplates and covers for transducers

B 4300 G10:
Abbreviation: PBT
Processing technique: Injection molding
Density: g/cm 3: 1.71
Reinforcement/fillers: %: GF 50 glass fibers
Melting point/range: F: 428-437
Viscosity code: 10
Moisture absorption at 73F, 50% RH: %: 0.12
Water absorption at 73F: %: 0.3
Physical form:
Granules: X
Coloration:
Natural color: X Colored: X
Specialty colorants: X Black: X
Processing:
Injection molding:
Mold shrinkage:
- Flow direction: in./in. x 10 3: 2-3
- Cross flow direction: in./in. x 10 3: 5-6

Recommended melt temperature: F: 473-518
Recommended mold temperature: F: 176-212
Applications: Engineering parts with particularly great rigidity, bedplates and housings for electric motors

BASF PLASTICS: ULTRADUR Poly(butylene terephthalate) (PBTP) (Continued):

Reinforced(Continued):

B 4300 K4:
Abbreviation: PBT
Processing Technique: Injection molding
Density: g/cm 3: 1.45
Reinforcement/fillers: %: GB 20 glass beads
Melting point/range: F: 428-437
Viscosity code: 12
Moisture absorption at 73F, 50% RH: %: 0.20
Water absorption at 73F: %: 0.4
Physical form:
Granules: X
Coloration:
Natural color: X Colored: X
Specialty colorants: X Black: X
Processing:
Injection molding:
Mold shrinkage:
- Flow direction: in./in. x 10 3: 9-22
- Cross flow direction: in./in. x 10 3: 9-22

Recommended melt temperature: F: 473-509
Recommended mold temperature: F: 104-176
Applications: Engineering parts with low distortion housings, fuel level sensor assemblies in automobiles and precision parts for optical instruments

B 4300 K6:
Abbreviation: PBT
Processing technique: Injection molding
Density: g/cm 3: 1.53
Reinforcement/fillers: %: GB 30 glass beads
Melting point/range: F: 428-437
Viscosity code: 10
Moisture absorption at 73F, 50% RH: %: 0.12
Water absorption at 73F: %: 0.3
Physical form:
Granules: X
Coloration:
Natural color: X Colored: X
Specialty colorants: X Black: X
Processing:
Injection molding:
Mold shrinkage:
- Flow direction: in./in. x 10 3: 9-20
- Cross flow direction: in./in. x 10 3: 9-20

Recommended melt temperature: F: 473-509
Recommended mold temperature: F: 104-176
Applications: Engineering parts; housings, bedplates and chassis

BASF PLASTICS: ULTRADUR Poly(butylene terephthalate) (PBTP) (Continued):

Reinforced(Continued):

KR 4001:
Abbreviation: PBT
Processing technique: Injection molding
Density: g/cm 3: 1.51
Reinforcement/fillers: %: M 25 mineral
Melting point/range: F: 428-437
Viscosity code: 12
Moisture absorption at 73F, 50% RH: %: 0.35
Water absorption at 73F: %: 0.5
Physical form:
Granules: X
Coloration:
Natural color: X Colored: X
Specialty colorants: X Black: X
Processing:
Injection molding:
Mold shrinkage:
- Flow direction: in./in. x 10 3: 11-13
- Cross flow direction: in./in. x 10 3: 11-13

Recommended melt temperature: F: 473-509
Recommended mold temperature: F: 104-140
Applications: Housings and front panels for household appliances; high-quality finish and little tendency to distortion

KR 4011:
Abbreviation: PBT
Processing technique: Injection molding
Density: g/cm 3: 1.55
Reinforcement/fillers: %: GF 20 glass fibers/M 10 mineral
Melting point/range: F: 428-437
Viscosity code: 10
Moisture absorption at 73F, 50% RH: %: 0.30
Water absorption at 73F: %: 0.5
Physical form:
Granules: X
Coloration:
Natural color: X Colored: X
Specialty colorants: X Black: X
Processing:
Injection molding:
Mold shrinkage:
- Flow direction: in./in. x 10 3: 4-5
- Cross flow direction: in./in. x 10 3: 4-5

Recommended melt temperature: F: 473-518
Recommended mold temperature: F: 140-194
Applications: Housings, bedplates, rigid and little tendency to distortion

BASF PLASTICS: ULTRADUR Poly(butylene terephthalate) (PBTP) (Continued):

Reinforced(Continued):

KR 4075:
Abbreviation: PBT
Processing technique: Injection molding
Density: g/cm 3: 1.36
Reinforcement/fillers: %: M10 mineral
Melting point/range: F: 428-437
Melt volume index MVI 482/10 (F/kg): cm 3/10 min: 80-100
Moisture absorption at 73F, 50% RH: 0.30
Water absorption at 73F: %: 0.5
Physical form:
Granules: X
Coloration:
Natural color: X — Colored: X
Specialty colorants: X — Black: X
Processing:
Injection molding:
Mold shrinkage:
- Flow direction: in./in. x 10 3: 14-15
- Cross flow direction: in./in. x 10 3: 14-15

Recommended melt temperature: F: 473-518
Recommended mold temperature: F: 140-194
Applications: Rigid and impact-resistant, parts for central door locking systems in automobiles

With flame retardant:
B 4306 G2:
Abbreviation: PBT
Processing technique: Injection molding
Density: g/cm 3: 1.50
Reinforcement/fillers: %: GF 10 glass fibers
Flame Retardant: X
Melting point/range: F: 428-437
Viscosity code: 10/12
Moisture absorption at 73F, 50% RH: 0.25
Water absorption at 73F: %: 0.4
Physical form:
Granules: X
Coloration:
Natural color: X — Colored: X
Specialty colorants: X — Black: X
Processing:
Injection molding:
Mold shrinkage:
- Flow direction: in./in. x 10 3: 8-10
- Cross flow direction: in./in. x 10 3: 10-12

Recommended melt temperature: F: 473-518
Recommended mold temperature: F: 176-212
Applications: Parts that have to conform to strict specifications on fire resistance, contactors, coil formers, switches, plug connectors

BASF PLASTICS: ULTRADUR Poly(butylene terephtalate) (PBTP) (Continued):

With flame retardant(Continued):
B 4306 G4:
Abbreviation: PBT
Processing technique: Injection molding
Density: g/cm 3: 1.55
Reinforcement/fillers: %: GF 20 glass fibers
Flame retardant: X
Melting point/range: 428-437
Viscosity code: 10/12
Moisture absorption at 73F, 50% RH: %: 0.20
Water absorption at 73F: %: 0.4
Physical form:
Granules: X
Coloration:
Natural color: X Colored: X
Specialty colorants: X Black: X
Processing:
Injection molding:
Mold shrinkage:
- Flow direction: in./in. x 10 3: 6-8
- Cross flow direction: in./in. x 10 3: 7-9

Recommended melt temperature: F: 473-518
Recommended mold temperature: F: 176-212
Applications: Parts that have to conform to strict specifications on fire resistance, relay housings, potentiometer spindles, rectifier housings, plug connectors

B 4306 G6:
Abbreviation: PBT
Processing technique: Injection molding
Density: g/cm 3: 1.65
Reinforecement/fillers: %: GF 30 glass fibers
Flame retardant: X
Melting point/range: F: 428-437
Viscosity code: 10/12
Moisture absorption at 73F, 50% RH: %: 0.20
Water absorption at 73F: %: 0.4
Physical form:
Granules: X
Coloration:
Natural color: X Colored: X
Specialty colorants: X Black: X
Processing:
Injection molding:
Mold shrinkage:
- Flow direction: in./in. x 10 3: 3-5
- Cross flow direction: in./in. x 10 3: 5-7

Recommended melt temperature: F: 473-518
Recommended mold temperature: F: 176-212
Applications: Parts that have to conform to strict specifications on fire resistance, housings for heavy-duty circuit breakers, coil formers, switches and lighting fixtures, plug connectors

BASF PLASTICS: ULTRADUR Poly(butylene terephthalate) (PBTP) (Continued):

With flame retardant(Continued):
B 4406 G2:
Abbreviation: PBT
Processing technique: Injection molding
Density: g/cm 3: 1.50
Reinforcement/fillers: %: GF 10 glass fibers
Flame retardant: X
Melting point/range: F: 428-437
Viscosity code: 10/12
Moisture absorption at 73F, 50% RH: %: 0.20
Water absorption at 73F: %: 0.4
Physical form:
Granules: X
Coloration:
Natural color: X Colored: X
Specialty colorants: X Black: X
Processing:
Injection molding:
Mold shrinkage:
- Flow direction: in./in. x 10 3: 7-9
- Cross flow direction: in./in. x 10 3: 8-10
Recommended melt temperature: F: 473-518
Recommended mold temperature: F: 176-212
Applications: Parts that have to conform to strict specifications on fire resistance, relay housings, coil formers, switches, plug connectors

B 4406 G4:
Abbreviation: PBT
Processing technique: Injection molding
Density: g/cm 3: 1.55
Reinforcement/fillers: %: GF 20 glass fibers
Flame retardant: X
Melting point/range: 428-437
Viscosity code: 10/12
Moisture absorption at 73F, 50% RH: %: 0.20
Water absorption at 73F: %: 0.4
Physical form:
Granules: X
Coloration:
Natural color: X Colored: X
Specialty colorants: X Black: X
Processing:
Injection molding:
Mold shrinkage:
- Flow direction: in./in. x 10 3: 6-8
- Cross flow direction: in./in. x 10 3: 7-9
Recommended melt temperature: F: 473-518
Recommended mold temperature: F: 176-212
Applications: Parts that have to conform to strict specifications on fire resistance, relay housings, plug connectors, switches and lighting fixtures

BASF PLASTICS: ULTRADUR Poly(butylene terephthalate) (PBTP) (Continued):

With flame retardant(Continued):

B 4406 G6:
Abbreviation: PBT
Processing technique: Injection molding
Density: g/cm 3: 1.65
Reinforcement/fillers: %: GF 30 glass fibers
Flame retardant: X
Melting point/range: 428-437
Viscosity code: 10/12
Moisture absorption at 73F, 50% RH: %: 0.20
Water absorption at 73F: %: 0.4
Physical form:
Granules: X
Coloration:
Natural color: X Colored: X
Specialty colorants: X Black: X
Processing:
Injection molding:
Mold shrinkage:
- Flow direction: in./in. x 10 3: 3-5
- Cross flow direction: in./in. x 10 3: 5-7

Recommended melt temperature: F: 473-518
Recommended mold temperature: F: 176-212
Applications: Parts that have to conform to strict specifications on fire resistance, potentiometer parts, plug connectors, switches

BASF PLASTICS: ULTRASON E Polyethersulfone (PESU)/ULTRASON S Polysulfone (PSU):

ULTRASON resins, which include polysulfones and polyethersulfones, have very high heat resistance. They can be used to mold high-quality engineering parts exposed to very high temperatures in applications where the properties of other engineering plastics, e.g. nylon, polycarbonate, polyoxymethylene, and poly(alkalene terephthalates) no longer suffice.

The key features of ULTRASON are:
- high rigidity
- high mechanical strength
- very high, sustained temperature resistance
- good dielectric properties
- excellent flame retardance
- extreme resistance to hydrolysis
- good dimensional stability

Unreinforced:

S 1010:
Processing technique: Injection molding
Mass density: g/cm 3: 1.24
Melt volume index MVI 572/21,6: cm 3/(10 min): 110
Melt volume index MVI 680/10: cm 3/(10 min): 225
Viscosity number VN: ml/g: 53
Moisture absorpt.: 73F/50% RH: %: 0.2
Water absorption to saturation at 73F: %: 0.8
Physical form:
Granules: X
Coloration:
Natural color: X
Colored: X on request
Specialty colorants: X on request
Black: X on request
Processing:
Processing shrinkage: Restricted: 10 -3 in./in.: 5.8/7.1
Free to shrink: 10 -3 in./in.: 5.1/5.9
Injection temperature: F: 625
Mold temperature: F: 250
Injection molding:
Injection temperature: F: 610-660
Mold temperature: F: 250-300
Applications: Very easy flow for moldings with adverse ratios of runner length to wall thickness

BASF PLASTICS: ULTRASON E Polyethersulfone (PESU)/ULTRASON S Polysulfone (PSU) (Continued):

Unreinforced(Continued):
S2010:
Processing technique: Injection molding, (extrusion), film extrusion, blow molding
Mass density: g/cm 3: 1.24
Melt volume index MVI 572/21,6: cm 3/(10 min): 50
Melt volume index MVI 680/10: cm 3/(10 min): 115
Viscosity number VN: ml/g: 64
Moisture absorpt.: 73F/50% RH: %: 0.2
Water absorption to saturation at 73F: %: 0.8
Physical Form:
Granules: X
Coloration:
Natural color: X
Colored: X on request
Specialty colorants: X on request
Black: X on request
Processing:
Processing shrinkage: Restricted: 10 -3 in./in.: 5.7/7.1
Free to shrink: 10 -3 in./in.: 4.6/5.7
Injection temperature: F: 660
Mold temperature: F: 285
Injection molding:
Injection temperature: F: 625-680
Mold temperature: F: 250-320
Applications: Easy flow, general-purpose injection molding product
S3010:
Processing technique: Injection molding, extrusion, film extrusion, blow molding
Mass density: g/cm 3: 1.24
Melt volume index MVI 572/21,6: cm 3/(10 min): 30
Melt volume index MVI 680/10: cm 3/(10 min): 60
Viscosity number VN: ml/g: 72
Moisture absorpt.: 73F/50% RH: %: 0.2
Water absorption to saturation at 73F: %: 0.8
Physical form:
Granules: X
Coloration:
Natural color: X
Colored: X on request
Specialty colorants: X on request
Black: X on request
Processing:
Processing shrinkage: Restricted: 10 -3 in./in.: 6.6/8.9
Free to shrink: 10 -3 in./in.: 4.9/5.9
Injection temperature: F: 680
Mold temperature: F: 320
Injection molding:
Injection temperature: F: 625-680
Mold temperature: F: 250-320
Applications: High viscosity product-injection molding/extrusion

BASF PLASTICS: ULTRASON E Polyethersulfone (PESU)/ULTRASON S Polysulfone (PSU) (Continued):

Unreinforced(Continued):
E1010:
Processing technique: Injection molding
Mass density: g/cm 3: 1.37
Melt volume index MVI 572/21,6: cm 3/(10 min): 30
Melt volume index MVI 680/10: cm 3/(10 min): 140
Viscosity number: VN: ml/g: 52
Moisture absorpt.: 73F/50% RH: %: 0.7
Water absorption to saturation at 73F: %: 2.1
Physical form:
Granules: X
Coloration:
Natural color: X
Colored: X on request
Specialty colorants: X on request
Black: X on request
Processing:
Processing shrinkage: Restricted: 10 -3 in./in.: 7.1/8.6
Free to shrink: 10 -3 in./in.:6.0/6.8
Injection temperature: F: 680
Mold temperature: F: 320
Injection molding:
Injection temperature: F: 645-715
Mold temperature: F: 285-320
Applications: Very easy flow for moldings with adverse ratios of runner length to wall thickness

E2010:
Processing technique: Injection molding, (extrusion), film extrusion, blow molding
Mass density: g/cm 3: 1.37
Melt volume index MVI 572/21,6: cm 3/(10 min): 10
Melt volume index MVI 680/10: cm 3/(10 min): 60
Viscosity number VN: ml/g: 59
Moisture absorpt.: 73F/50% RH: %: 0.7
Water absorption to saturation at 73F: %: 2.1
Physical Form:
Granules: X
Coloration:
Natural color: X
Colored: X on request
Specialty colorants: X on request
Black: X on request
Processing:
Processing shrinkage: Restricted: 10 -3 in./in.: 7.1/8.7
Free to shrink: 10 -3 in./in.: 6.2/7.3
Injection temperature: F: 680
Mold temperature: F: 320
Injection molding:
Injection temperature: F: 645-715
Mold temperature: F: 285-320
Applications: Easy flow, general-purpose injection molding product

BASF PLASTICS: ULTRASON E Polyethersulfone (PESU)/ULTRASON S Polysulfone (PSU) (Continued):

Unreinforced(Continued):

E3010:
Processing technique: Injection molding, extrusion, film extrusion, blow molding
Mass density: g/cm 3: 1.37
Melt volume index MVI 572/21,6: cm 3/(10 min): 3
Melt volume index MVI 680/10: cm 3/(10 min): 30
Viscosity number VN: ml/g: 68
Moisture absorpt.: 73F/50% RH: %: 0.7
Water absorption to saturation at 73F: 2.1
Physical form:
Granules: X
Coloration:
Natural color: X
Colored: X on request
Specialty colorants: X on request
Black: X on request
Processing:
Processing shrinkage: Restricted: 10 -3 in./in.: 7.5/9.1
Free to shrink: 10 -3 in./in.: 7.3/8.3
Injection temperature: F: 700
Mold temperature: F: 320
Injection molding:
Injection temperature: F: 660-735
Mold temperature: F: 285-320
Applications: High viscosity product for injection molding/ extrusion

E6010:
Processing technique: Extrusion, film extrusion, blow molding
Mass density: g/cm 3: 1.37
Melt volume index MVI 680/10: cm 3/(10 min): 20
Viscosity number VN: ml/g: 79
Moisture absorpt.: 73F/50% RH: %: 0.7
Water absorption to saturation at 73F: %: 2.1
Physical Form:
Granules: X
Coloration:
Natural color: X
Colored: X on request
Specialty colorants: X on request
Black: X on request
Processing:
Processing shrinkage: Restricted: 10 -3 in./in.: 8.4/9.9
Free to shrink: 10 -3 in./in.: 8.7/9.1
Injection temperature: F: 735
Mold temperature: F: 320
Applications: Very high viscosity for extrusion

BASF PLASTICS: ULTRASON E Polyethersulfone (PESU)/ULTRASON S Polysulfone (PSU) (Continued):

Reinforced:
S2010 G2:
Processing technique: Injection molding, (Extrusion)
Mass density: g/cm 3: 1.31
Reinforcement/fillers: %: GF 10 glass fibers
Melt volume index MVI 572/21.6: cm 3/(10 min): 35
Melt volume index MVI 680/10: cm 3/(10 min): 75
Viscosity number VN: ml/g: 64
Moisture absorpt.: 73F/50% RH: %: 0.2
Water absorption to saturation at 73F: %: 0.7
Physical Form:
Granules: X
Coloration:
Natural color: X
Colored: X on request
Specialty colorants: X on request
Black: X on request
Processing:
Processing shrinkage: Restricted: 10 -3 in./in.: 4.8/4.9
Free to shrink: 10 -3 in./in.: 3.0/4.2
Injection temperature: F: 660
Mold temperature: F: 285
Injection molding: Injection temperature: F: 660-715
Mold temperature: F: 265-355
Applications: 10% Glass-fiber-reinforcement. Easy flow, general-purpose injection molding product

S2010 G4:
Processing technique: Injection molding, (Extrusion)
Mass density: g/cm 3: 1.40
Reinforcement/fillers: %: GF 20 glass fibers
Melt volume index MVI 572/21,6: cm 3/(10 min): 30
Melt volume index MVI 680/10: cm 3/(10 min): 60
Viscosity number VN: ml/g: 64
Moisture absorpt.: 73F/50% RH: %: 0.1
Water absorption to saturation at 73F: %: 0.6
Physical form:
Granules: X
Coloration:
Natural color: X
Colored: X on request
Specialty colorants: X on request
Black: X on request
Processing:
Processing shrinkage: Restricted: 10 -3 in./in.: 3.7/5.3
Free to shrink: 10 -3 in./in.: 1.6/4.0
Injection temperature: F: 660
Mold temperature: F: 285
Injection molding: Injection temperature: F: 660-715
Mold temperature: F: 265-355
Applications: 20% Glass-fiber-reinforcement. Easy flow, general-purpose injection molding product.

BASF PLASTICS: ULTRASON E Polyethersulfone (PESU)/ULTRASON S Polysulfone (PSU) (Continued):

Reinforced(Continued):
S2010 G6:
Processing technique: Injection molding, (Extrusion)
Mass density: g/cm 3: 1.49
Reinforcement/fillers: %: GF 30 glass fibers
Melt volume index MVI 572/21,6: cm 3/(10 min): 20
Melt volume index MVI 680/10: cm 3/(10 min): 40
Viscosity number VN: ml/g: 64
Moisture absorpt.: 73F/50% RH: %: 0.1
Water absorption to saturation at 73F: %: 0.5
Physical Form:
Granules: X
Coloration:
Natural color: X
Colored: X on request
Specialty colorants: X on request
Black: X on request
Processing:
Processing shrinkage: Restricted: 10 -3 in./in.: 3.4/6.0
Free to shrink: 10 -3 in./in.: 1.3/4.8
Injection temperature: F: 660
Mold temperature: F: 285
Injection molding: Injection temperature: F: 660-715
Mold temperature: F: 265-355
Applications: 30% Glass-fiber-reinforcement. Easy flow, general-purpose injection molding product
E1010 G2:
Processing technique: Injection molding
Mass density: g/cm 3: 1.45
Reinforcement/fillers: %: GF 10 glass fibers
Melt volume index MVI 572/21,6: cm 3/(10 min): 10
Melt volume index MVI 680/10: cm 3/(10 min): 65
Viscosity number VN: ml/g: 52
Moisture absorpt.: 73F/50% RH: %: 0.6
Water absorption to saturation at 73F: %: 1.9
Physical form:
Granules: X
Coloration:
Natural color: X
Colored: X on request
Specialty colorants: X on request
Black: X on request
Processing:
Processing shrinkage: Restricted: 10 -3 in./in.: 5.2/5.4
Free to shrink: 10 -3 in./in.: 3.6/5.1
Injection temperature: F: 680
Mold temperature: F: 320
Injection molding: Injection temperature: F: 660-715
Mold temperature: F: 300-355
Applications: 10% Glass-fiber-reinforcement. Very easy flow for moldings with adverse ratios of runner length to wall thickness

BASF PLASTICS: ULTRASON E Polyethersulfone (PESU)/ULTRASON S Polysulfone (PSU) (Continued):

Reinforced(Continued):
E1010 G4:
Processing technique: Injection molding
Mass density: g/cm 3: 1.53
Reinforcement/fillers: %: GF 20 glass fibers
Melt volume index MVI 572/21,6: cm 3/(10 min): 8
Melt volume index MVI 680/10: cm 3/(10 min): 55
Viscosity number VN: ml/g: 52
Moisture absorpt.: 73F/50% RH: %: 0.6
Water absorption to saturation at 73F: %: 1.7
Physical form:
Granules: X
Coloration:
Natural color: X
Colored: X on request
Specialty colorants: X on request
Black: X on request
Processing:
Processing shrinkage: Restricted: 10 -3 in./in.: 3.8/5.8
Free to shrink: 10 -3 in./in.: 2.1/4.9
Injection temperature: F: 680
Mold temperature: F: 320
Injection molding: Injection temperature: F: 660-715
Mold temperature: F: 300-355
Applications: 20% Glass-fiber-reinforcement. Very easy flow for moldings with adverse ratios of runner length to wall thickness
E1010 G6:
Processing technique: Injection molding
Mass density: g/cm 3: 1.60
Reinforcement/fillers: %: GF 30 glass fibers
Melt volume index MVI 572/21,6: cm 3/(10 min): 6
Melt volume index MVI 680/10: cm 3/(10 min): 45
Viscosity number VN: ml/g: 52
Moisture absorpt.: 73F/50% RH: %: 0.5
Water absorption to saturation at 73F: %: 1.5
Physical Form:
Granules: X
Coloration:
Natural color: X
Colored: X on request
Specialty colorants: X on request
Black: X
Processing:
Processing shrinkage: Restricted: 10 -3 in./in.: 3.4/6.5
Free to shrink: 10 -3 in./in.: 1.9/5.7
Injection temperature: F: 680
Mold temperature: F: 320
Injection molding: Injection temperature: F: 660-715
Mold temperature: F: 300-355
Applications: 30% Glass-fiber-reinforcement. Very easy flow for moldings with adverse ratios of runner length/wall thickness

BASF CORP.: ULTRASON E Polyethersulfone (PESU)/ULTRASON S Polysulfone (PSU) (Continued):

Reinforced(Continued):
E2010 G2:
Processing technique: Injection molding, (Extrusion)
Mass density: g/cm 3: 1.45
Reinforcement/fillers: %: GF 10 glass fibers
Melt volume index MVI 572/21,6: cm 3/(10 min): 5
Melt volume index MVI 680/10: cm 3/(10 min): 35
Viscosity number VN: ml/g: 59
Moisture absorpt.: 73F/50% RH: %: 0.6
Water absorption to saturation at 73F: %: 1.9
Physical form:
Granules: X
Coloration:
Natural color: X
Colored: X on request
Specialty colorants: X on request
Black: X on request
Processing:
Processing shrinkage: Restricted: 10 -3 in./in.: 5.7/6.0
Free to shrink: 10 -3 in./in.: 3.7/5.2
Injection temperature: F: 680
Mold temperature: F: 320
Injection molding: Injection temperature: F: 660-715
Mold temperature: F: 300-375
Applications: 10% Glass-fiber-reinforcement. Easy flow, general-purpose injection molding product.

E2010 G4:
Processing technique: Injection molding, (Extrusion)
Mass density: g/cm 3: 1.53
Reinforcement/fillers: %: GF 20 glass fibers
Melt volume index MVI 572/21,6: cm 3/(10 min): 3
Melt volume index MVI 680/10: cm 3/(10 min): 25
Viscosity number VN: ml/g: 59
Moisture absorpt.: 73F/50% RH: %: 0.6
Water absorption to saturation at 73F: %: 1.7
Physical form:
Granules: X
Coloration:
Natural color: X
Colored: X on request
Specialty colorants: X on request
Black: X
Processing:
Processing shrinkage: Restricted: 10 -3 in./in.: 4.5/6.4
Free to shrink: 10 -3 in./in.: 2.4/5.6
Injection temperature: F: 680
Mold temperature: F: 320
Injection molding: Injection temperature: F: 660-735
Mold temperature: F: 300-375
Applications: 20% Glass-fiber-reinforcement. Easy flow, general-purpose injection molding product

BASF PLASTICS: ULTRASON E Polyethersulfone (PESU)/ULTRASON S Polysulfone (PSU) (Continued):

Reinforced(Continued):
E2010 G6:
Processing technique: Injection molding, (Extrusion)
Mass density: g/cm 3: 1.60
Reinforcement/fillers: %: GF 30 glass fibers
Melt volume index MVI 572/21,6: cm 3/(10 min): 3
Melt volume index MVI 680/10: cm 3/(10 min): 20
Viscosity number VN: ml/g: 59
Moisture absorpt.: 73F/50% RH: %: 0.5
Water absorption to saturation at 73F: %: 1.5
Physical form:
Granules: X
Coloration:
Natural color: X
Colored: X on request
Specialty colorants: X on request
Black: X
Processing:
Processing shrinkage: Restricted: 10 -3 in./in.: 4.0/7.5
Free to shrink: 10 -3 in./in.: 1.7/5.6
Injection temperature: F: 680
Mold temperature: F: 320
Injection molding: Injection temperature: 660-735
Mold temperature: 300-375
Applications: 30% Glass-fiber-reinforcement. Easy flow, general-purpose injection molding product
KR 4101:
Processing technique: Injection molding, (Extrusion)
Mass density: g/cm 3: 1.62
Reinforcement/fillers: %: M30 mineral
Melt volume index MVI 572/21,6: cm 3/(10 min): 6
Melt volume index MVI 680/10: cm 3/(10 min): 40
Moisture absorpt.: 73F/50% RH: %: 59
Water absorption to saturation at 73F: %: 1.5
Physical Form:
Granules: X
Coloration:
Natural color: X
Colored: X on request
Specialty colorants: X on request
Black: X on request
Processing:
Processing shrinkage: Restricted: 10 -3 in./in.: 6.0/8.0
Free to shrink: 10 -3 in./in.: 5.5/6.3
Injection temperature: F: 680
Mold temperature: F: 320
Injection molding: Injection temperature: F: 660/715
Mold temperature: F: 300/355
Applications: 30% Mineral-filler. Easy flow, general-purpose injection molding product

CARGILL, INC.: Butylated Urea Resins:

20 2000:
% N.V. by Wt.: 60
Solvent: 60% n-Butanol/40% Xylene
Viscosity: M-P
Solvent Tolerance %: 170-300
Max. Color APHA: 40
Max. Acid No. (Solids Basis): 8.3
W.P.G. Lbs.: 8.40
Excellent general purpose urea especially adaptable to single coat enamels of high solids content. Outstanding properties include leveling, gloss, flexibility, compatibility and stability.

20 2001:
% N.V. By Wt.: 60
Solvent: n-Butanol
Viscosity: G-J
Solvent Tolerance %: 350 min.
Max. Color APHA: 40
Max. Acid No. (Solids Basis): 8.3
W.P.G. Lbs.: 8.30
Exempt solvent version of 20 2000.

20 2051:
% N.V. by Wt.: 50
Solvent: Isobutanol
Viscosity: W-Y
Solvent Tolerance %: 100-200
Max. Color APHA: 40
Max. Acid No. (Solids Basis): 12.0
W.P.G. Lbs.: 8.40
20 2053 @ 50% NVM

20 2052:
% N.V. by Wt.: 50
Solvent: 100% Isobutanol
Viscosity: W-Z
Solvent Tolerance %: 200-400
Max. Color APHA: 40
Max. Acid No. (Solids Basis): 10.0
W.P.G. Lbs.: 8.40
Exempt solvent version of 20 2053.

CARGILL, INC.: Butylated Urea Resins(Continued):

20 2053:
% N.V. by Wt.: 60
Solvent: 60% Isobutanol/40% Xylene
Viscosity: Y-Z1
Solvent Tolerance %: 100-200
Max. Color APHA: 40
Max. Acid No. (Solids Basis): 10.0
W.P.G. Lbs.: 8.40
Designed for rapid curing application at ordinary baking temperatures or for use at lower temperatures such as those encountered with infra-red equipment. Recommended for alkyd-urea conversion varnishes.

20 2058:
% N.V. by Wt.: 70
Solvent: 82% Isobutanol, 18% VM&P
Viscosity: Z4-Z6
Solvent Tolerance %: 100-300
Max. Color APHA: 40
Max. Acid No. (Solids Basis): 8.6
W.P.G. Lbs.: 8.4
Similar to 20 2052 with higher solids and higher viscosity.

CARGILL, INC.: High Solids Butylated Urea Resins:

21 2101:
% N.V. By Wt.: 75
Solvent: n-Butanol
Viscosity: Z3-Z4+
Solvent Tolerance %: 250-500
Max. Color Gardner: 2
Max. Acid No. (Solids Basis): 10.0
W.P.G. Lbs.: 8.76
High solids butylated urea offering excellent adhesion and recoatability.

CARGILL, INC.: Melamine Resins:

22 2218:
% N.V. by Wt.: 50
Solvent: 60% Isobutanol/40% Xylene
Viscosity: M-Q
Solvent Tolerance %: 500 Min.
Max. Color APHA: 40
Max. Acid No. (Solids Basis): 2.0
W.P.G. Lbs.: 8.25
A good general purpose melamine formaldehyde resin having rapid cure rate, outstanding gloss retention and heavy duty resistance to weathering, detergents, acids, alkalies and household stains.

22 2219:
% N.V. by Wt.: 50
Solvent: Isobutanol
Viscosity: M-Q
Solvent Tolerance %: 500 Min.
Max. Color APHA: 40
Max. Acid No. (Solids Basis): 2.0
W.P.G. Lbs.: 8.00
Exempt solvent version of 22 2218.

22 2229:
% N.V. by Wt.: 55
Solvent: 100% n-Butanol
Viscosity: C-F
Solvent Tolerance %: 500 Min.
Max. Color APHA: 40
Max. Acid No. (Solids Basis): 1.8
W.P.G. Lbs.: 8.2
Exempt solvent version of 22 2228.

22 2228:
% N.V. by Wt.: 55
Solvent: 55% n-Butanol/45% Xylene
Viscosity: D-F
Solvent Tolerance %: 500 Min.
Max. Color APHA: 40
Max. Acid No. (Solids Basis): 1.8
W.P.G. Lbs.: 8.3
A specially designed low viscosity melamine formaldehyde coating resin.

CARGILL, INC.: Melamine Resins(Continued):

22 2240:
% N.V. by Wt.: 50
Solvent: 75% Isobutanol/25% Xylene
Viscosity: P-S
Solvent Tolerance %: 200-500
Max. Color APHA: 40
Max. Acid No. (Solids Basis): 2.0
W.P.G. Lbs.: 8.20
An iso-butylated melamine designed for rapid cure applications.

22 2260:
% N.V. by Wt.: 60
Solvent: 55% n-Butanol/45% Xylene
Viscosity: X-Z
Solvent Tolerance %: 200-600
Max. Color APHA: 40
Max. Acid No. (Solids Basis): 1.7
W.P.G. Lbs: 8.60
60% solids version of 22 2228.

CARGILL, INC.: High Solids Melamine Resins:

RESIMENE 717:
CARGILL 23 2317:
% N.V. by Wt.: 84
Solvent: n-Butanol
Viscosity: Y-Z3
Max. Color APHA: 40
Water Solubility: w/Co-Solvent
W.P.G. Lbs.: 9.5-9.7
A high solid polymeric methylated melamine designed to exhibit low temp cure. Uncatalyzed cure responses as low as 250F & catalyzed cure responses as 200F are possible. Exhibits wide range compatibility with Polyester, Alkyds, Acrylic, Vinyls, Epoxies and Cellulosics. Alkylation alcohol is methanol. Used in high solids coatings and water-borne coatings (with Co-Solvents).

RESIMENE 735:
CARGILL 23 2335:
% N.V. by Wt.: 80
Solvent: Isopropanol
Viscosity: T-W
Max. Color APHA: 40
Water Solubility: w/Co-Solvent
W.P.G. Lbs.: 9.4-9.6
A high solid methylated polymeric melamine, solvent and water soluble offering fast cure response and uncatalyzed enamel stability. Able to achieve flexible impact resistant films.

RESIMENE is a registered trademark of Monsanto Company.

CARGILL, INC.: High Solids Melamine Resins(Continued):

RESIMENE 741:
CARGILL 23 2341:
% N.V. by Wt.: 89
Solvent: Isopropanol
Viscosity: W-Z3
Solvent Tolerance %: 100-400
Max. Color APHA: 40
Water Solubility: w/Co-Solvent
W.P.G. Lbs.: 9.7-9.9
A high solid methylated polymeric melamine that makes this a very versatile product. Used in both aqueous and solvent borne coatings due to excellent balance between compatibility and cure response. Excellent cure response is achieved with minimal catalyst (less than 0-2% PTSA solids on melamine solids).

RESIMENE 745:
CARGILL 23 2345:
% N.V. by Wt.: 98 min.
Viscosity: Y-Z3
Max. Color APHA: 40
Water Solubility: w/Co-Solvent
W.P.G. Lbs.: 9.9-10.1
Liquid hexamethoxymethyl melamine. Its monomeric composition offers excellent catalyzed cure response between 180F - over 600F.

RESIMENE 747:
CARGILL 23 2347:
% N.V. by Wt.: 98 Min.
Viscosity: Y-Z3
Solvent Tolerance %: 200-500
Max. Color APHA: 40
Water Solubility: w/Co-Solvent
W.P.G. Lbs.: 10.0-10.2
Liquid hexamethoxymethyl melamine. Used in both solvent and aqueous coatings. Its monomeric composition offers excellent catalyzed cure response, stability and compatibility. Outstanding film flexibility and toughness are generally achieved.

RESIMENE 750:
CARGILL 23 2350:
% N.V. by Wt.: 80
Solvent: n-Butanol
Viscosity: X-Z4
Max. Color APHA: 40
Water Solubility: w/Co-Solvent
W.P.G. Lbs.: 8.8-9.0
A high solids butylated melamine resin, with very high compatability. Exhibits excellent flow properties and cratering resistance. Solvent soluble (active solvent) and water extendable with co-solvent.

CARGILL, INC.: High Solids Melamine Resins(Continued):

RESIMENE 755:
CARGILL 23-2355:
% N.V. by Wt.: 98 Min.
Viscosity: S-W
Solvent Tolerance %: 100 Min.
Max. Color APHA: 40
Water Solubility: w/Co-Solvent
W.P.G. Lbs.: 9.0-9.2
Hexaalkoxymethyl melamine of mixed methoxy/butoxy functionality equivalent levels of methoxy & butoxy functionality. Exhibits better flow properties significantly better resistance to crater than hexamethoxy resins. Solvent soluble (active solvent) and H2O extendable with Co-Solvent.

23 2387:
% N.V. by Wt.: 80
Solvent: 50% Isopropanol/50% Isobutanol
Viscosity: W-Z
Max. Color APHA: 40
Max. Acid No. (Solids Basis): 1.2
Water Solubility: 100 Min.
W.P.G. Lbs.: 9.5
A high solids polymeric methylated melamine for use with baking alkyds, silicone polyesters, oil free polyesters, thermoset acrylics and water reducible resins. Will cure faster and at lower temperatures than the monomeric methylated melamines.

RESIMENE 797:
CARGILL 2397:
% N.V. by Wt.: 92
Solvent: Ethanol
Viscosity: W-Z
Max. Color APHA: 40
Water Solubility: requires high levels of co-solvent to be water-dilutable.
W.P.G. Lbs.: 9.5
A modified methylated melamine, recommended for use in conventional solvent and high solids coatings. With high levels of acid catalyst, very low cure schedules are possible, as low as 150F.

23 2390:
% N.V. by Wt.: 80
Solvent: n-Butanol
Viscosity: Z3-Z5
Solvent Tolerance: 350 Min.
Max. Color APHA: 40
Max. Acid No. (Solids Basis): 1.2
W.P.G. Lbs.: 8.7
A high solids butylated melamine with wide compatability with resins, including baking alkyds, silicone polyesters, oil-free polyesters, nitrocellulose, cellulose acetate butyrates and thermosetting acrylics.

CARGILL, INC.: Powder Coating Resins:

30 3000:
% N.V. by Wt.: 100
ICI Visc. Cone & Plate (200C) (Poise): 30-45
Hydroxyl No.: 45-55
Equivalent Weight: 1020-1250
Acid No. (Solids Basis): 15 Max.
Specific Gravity: 1.1-1.2
Glass Transition Temp. C: 55-61
Type: Hydroxyl Terminated
Extremely tough, durable coatings can be produced with this powdered polyester when combined with CARGILL curing agent 24 2400 or 24 2430. Films have excellent flexibility, impact resistance, hardness, gloss and exterior durability.

30 3002:
% N.V. by Wt.: 100
ICI Visc. Cone & Plate (200C) (Poise): 25-35
Hydroxyl No.: 107-125
Equivalent Weight: 450-520
Acid No. (Solids Basis): 15 Max.
Specific Gravity: 1.1-1.2
Glass Transition Temp. C: 51-57
Type: Hydroxyl Terminated
Better hardness and chemical resistance than 30 3000. Formulated to give excellent detergent resistance, flow and hardness; can be extremely fast, low temp. curing with 24 2450 (catalyzed).

30 3008:
% N.V. by Wt.: 100
ICI Visc. Cone & Plate (200C) (Poise): 17-30
Hydroxyl No.: 280-310
Equivalent Weight: 180-200
Acid No. (Solids Basis): 15 Max.
Specific Gravity: 1.1-1.2
Glass Transition Temp. C: 37-43
Type: Hydroxyl Terminated
A highly balanced saturated polyester. Gives extremely hard, solvent resistant films when combined with 24 2400 or 24 2430. Also has excellent chemical and stain resistance. May be blended with 30 3000 to increase hardness of 30 3000 films ranging from H to 5H and to give adequate anti-sintering properties.

CARGILL, INC.: Powder Coating Resins(Continued):

30 3011:
% N.V. by Wt.: 100
ICI Visc. Cone & Plate (200C) (Poise): 17-30
Hydroxyl No.: 280-310
Equivalent Weight: 180-200
Acid No. (Solids Basis): 7-15
Specific Gravity: 1.1-1.2
Glass Transition Temp. C: 42-46
Type: Hydroxyl Terminated
Similar properties of 30 3008 with an increased Tg value.

30 3012:
% N.V. by Wt.: 100
ICI Visc. Cone & Plate (200C) (Poise): 60-90
Hydroxyl No.: 50-60
Equivalent Weight: 935-1122
Acid No. (Solids Basis): 15 Max.
Specific Gravity: 1.1-1.2
Glass Transition Temp. C: 49-55
Type: Hydroxyl Terminated
High viscosity polyester designed to give better edge coverage than standard powder coating resins. When combined with a suitable curing agent this resin maintains good impact resistance at 3 to 5 mils than standard polyester resin. Offers better reactivity than 30 3000.

30 3016:
% N.V. by Wt.: 100
ICI Visc. Cone & Plate (200C) (Poise): 30-40
Hydroxyl No.: 35-45
Equivalent Weight: 1250-1600
Acid No. (Solids Basis): 15 Max.
Specific Gravity: 1.1-1.2
Glass Transition Temp. C: 48-52
Type: Hydroxyl Terminated
Yields superior flow, impact resistance, gloss and exterior durability compared to 30 3000 polyester. Can be formulated with less curing agent than 30 3000.

30-3020:
% N.V. by Wt.: 100
ICI Visc. Cone & Plate (200C) (Poise): 30-40
Hydroxyl No.: 35-45
Equivalent Weight: 1250-1600
Acid No. (Solids Basis): 15 Max.
Specific Gravity: 1.1-1.2
Glass Transition Temp. C: 50-54
Type: Hydroxyl Terminated
Similar properties of 30 3016 with an increased Tg value.

CARGILL, INC.: Powder Coating Resins(Continued):

30 3051:
% N.V. by Wt.: 100
ICI Visc. Cone & Plate (200C) (Poise): 27-40
Equivalent Weight: 561-623
Acid No. (Solids Basis): 85-100
Specific Gravity: 1.1-1.2
Glass Transition Temp. C: 60-66
Type: Carboxyl Terminated
Carboxyl terminated polyester. When properly formulated with suitable solid epoxy resins with equivalent weights in the 500-1000 range, excellent non-emissive powder coatings can be achieved. Yields excellent mechanical and corrosion resistance properties. Less subject to yellowing on overbake than conventional epoxy powder coatings. Designed for non-critical exterior applications and interior application is essentially the same as its epoxy component.

30 3061:
% N.V. by Wt.: 100
ICI Visc. Cone & Plate (200C) (Poise): 35-50
Equivalent Weight: 1870
Acid No. (Solids Basis): 35 Max.
Specific Gravity: 1.1-1.2
Glass Transition Temp. C: 56-62
Type: Carboxyl Terminated
Designed to be cured with triglycidyl isocyanurate (TGIC). Offers excellent physical properties and very good exterior durability.

CARGILL, INC.: Powder Curing Agents:

24 2400:
Specific Gravity: 1.1-1.2
Glass Transition Temp. (C): 50-54
Combining Weight: 240
Gardner Viscosity: S-W @ 65% in MIAK
% NCO: 1.0
24 2400 is an aliphatic polyisocyanurate curing agent designed primarily for use with hydroxyl polyesters. 24 2400 does, however, find use as a curing agent for other hydroxyl, carboxyl, amide or amine terminated polymers. 24 2400 is recommended for the formulation of stable, one-package heat cured coatings.
Outstanding film characteristics contributed by 24 2400 are: high gloss, excellent exterior gloss retention and excellent exterior color retention.

24 2430:
Specific Gravity: 1.1-1.2
Glass Transition Temp. (C): 52-58
Combining Weight: 226
Gardner Viscosity: T-X @ 60% in MIAK
% NCO: 1.0
24 2430 is an aliphatic polyisocyanurate curing agent designed for use with hydroxyl polyesters. 24 2430 does, however, find use as a curing agent for other hydroxyl, carboxyl, amide or amine terminated polymers. 24 2430 is recommended for the formulation of stable, one-package heat cured coatings at lower temperatures.
Outstanding film characteristics contibuted by 24 2430 are: high gloss, excellent exterior gloss retention, and excellent exterior color retention.

24 2450:
Specific Gravity: 1.1-1.2
Glass Transition Temp. (C): 52-58
Combining Weight: 215
Gardner Viscosity: V-Y @ 65% in MIAK
% NCO: 1.0
24 2450 is an aromatic polyisocyanate curing agent designed for use with hydroxyl polyesters. It is a low cost, low temperature curing agent which offers all the advantages of 2400 and 2430, except the exceptional exterior durability. Exterior durability falls in the range between epoxies and 2400 systems.

CARGILL, INC.: Lithographic Ink Resins:

Long Oil Alkyds:

48 5506:
% N.V. by Wt.: 99
Solvent: None Present
Viscosity: Z7
Reduced Viscosity: W-Y @ 70% MS
Max. Color: 9 @ 70% MS
Max. Acid No. (Solid Basis): 8
W.P.G.: 8.7
Type Oil: Linseed
Type Acid: PA
#6 Lithographic ink resin.

48 5521:
% N.V. by Wt.: 99
Solvent: None Present
Viscosity: Y-Z1
Max. Color: 7
Max. Acid No. (Solid Basis): 6-10
W.P.G.: 8.4
Type Oil: Linseed
Type Acid: IPA
#1 Lithographic ink resin.

48 5523:
% N.V. by Wt.: 99
Solvent: None Present
Viscosity: Z3-Z4
Max. Color: 10
Max. Acid No. (Solid Basis): 7-12
W.P.G.: 8.4
Type Oil: Linseed
Type Acid: IPA
#3 Lithographic ink resin.

48 5525:
% N.V. by Wt.: 99
Solvent: None Present
Viscosity: Z5-Z6
Max. Color: 10
Max. Acid No. (Solid Basis): 7-12
W.P.G.: 8.5
Type Oil: Linseed
Type Acid: PA/IPA
#5 Lithographic ink resin.

CARGILL, INC.: Lithographic Ink Resins(Continued):

Long Oil Alkyds(Continued):

48 5527:
% N.V. by Wt.: 99
Solvent: None Present
Viscosity: Z8+
Max. Color: 9
Max. Acid No. (Solid Basis): 10-16
W.P.G.: 8.5
Type Oil: Linseed
Type Acid: IPA
#7 Lithographic ink resin.

48 5528:
% N.V. by Wt.: 99
Solvent: None Present
Viscosity: Z9+
Max. Color: 9
Max. Acid No. (Solid Basis): 8-14
W.P.G.: 8.5
Type Oil: Soya
Type Acid: IPA
#8 Lithographic ink resin.

48 5535:
% N.V. by Wt.: 99
Solvent: None Present
Viscosity: Z6-Z7
Max. Color: 9
Max. Acid No. (Solid Basis): 7-12
W.P.G.: 8.5
Type Oil: Mixed
Type Acid: IPA
#6 Lithographic ink resin.

48 5537:
% N.V. by Wt.: 99
Solvent: None Present
Viscosity: Z9+
Max. Color: 9
Max. Acid No. (Solid Basis): 10-15
W.P.G.: 8.5
Type Oil: Linseed
Type Acid: IPA
#7 Lithographic ink resin.

CARGILL, INC.: Lithographic Ink Resins(Continued):

Oil Modified Polyurethanes:

43 4390:
% N.V. by Wt.: 98 min.
Viscosity: 24 Poise/Z-Z2
Max. Color: 8
Max. Acid No. (Solid Basis): 1
W.P.G.: 8.2
Type Oil: Linseed
High quality polyurethane ink resin.

43 4391:
% N.V. by Wt.: 98 min.
Viscosity: 3000 Poise
Reduced Viscosity: Z1-Z2 @ 75% in MS
Max. Color: 12
Max. Acid No. (Solid Basis): 6
W.P.G.: 8.5
Type Oil: Linseed
Designed for lithographic inks.

CYRO INDUSTRIES: CYROLITE G-20 HIFLO Molding/Extrusion Compound:

CYROLITE G-20 HIFLO molding compound has been developed for easier molding of parts in hard-to-fill molds such as encountered in large area and small intricate moldings.

While retaining the toughness and transparency of the acrylic multipolymers, the properties of CYROLITE G-20 HIFLO make it an ideal material for fabricating parts as thin-walled as 0.030", as well as large-area moldings requiring several pounds of material.

CYROLITE G-20 HIFLO meets the USP requirements as a Class VI Plastic 70C, 24 hours.

Optical Properties:
- Color-Blue Tint: Clear
- Light Transmission, %: 88
- Haze, %: 6.5

Physical Properties:
- Izod Impact Strength, Notched
- Ft. lbs./inch of notch:
  - 73F: 1/8 inch bar: 2.2
  - 73F: 1/4 inch bar: 1.8
  - 32F: 1/4 inch bar: 1.1
  - 0F: 1/4 inch bar: 1.0
  - -40F: 1/4 inch bar: 0.7
- Tensile Strength, psi: 6,200
- Tensile Elongation, % at yield: 4.0
- Flexural Strength, psi: 9,400
- Flexural Modulus, psi: 310,000
- Falling Dart: ft.lbs./in: 27
- Specific Gravity: 1.11

Thermal Properties:
- Deflection Temperature (264 psi): 186F(86C)
- Average Melt Index (5000g, 230C): 12

Barrier Properties:
- MVTR gms/mil/100 in 2 24 hrs.: 9
- O2 cc/mil/100 in 2 24 hrs. ATM: 40
- CO2 cc/mil/100 in 2 24 hrs.: 100

Suggested applications for CYROLITE G-20 HIFLO molding and extrusion compound:

Tubs and Lids	Bottles
Jars	Medical Trays
Medical Blisters	Pharmaceutical Blisters
Medical Devices	Refrigeration Parts
Appliance Parts	Candy Trays
Toys	Profiles
Tackle Boxes	Sheet
Film	Industrial Applications

CYRO INDUSTRIES: CYROLITE G-20 Molding and Extrusion Compound:

CYROLITE G-20 molding and extrusion compound has been developed for use in those applications requiring an economical, tough, transparent material with good chemical resistance. Excellent processability allows it to be extruded, blow molded, vacuum formed and injection molded.

Excellent resistance to oils and fats, suitability for hot-fill, and retention of strength at low temperatures make CYROLITE G-20 multipolymer an ideal food packaging material. In the medical packaging market, this product offers a high heat distortion temperature, excellent retention of properties after ethylene oxide and radiation sterilization, and no plasticizers to migrate into the package contents.

Optical Properties:
- Color-Natural Polymer: Clear
- Light Transmission, %: 88
- Haze, %: 8

Physical Properties:
- Izod Impact Strength, Notched
- Ft. lbs./inch of notch (1/4 inch bar):
  - 73F: 1.8
  - 32F: 1.1
  - 0F: 1.0
  - -40F: 0.7
- Tensile Strength, psi: 6,800
- Tensile Elongation, psi at yield: 4.0
- Flexural Strength, psi: 10,500
- Flexural Modulus, psi: 335,000
- Falling Dart: 27
- Specific Gravity: 1.11

Thermal Properties:
- Deflection Temperature (264 psi): 186F(86C)

Barrier Properties:
- MVTR gms-mil/100 in 2 24 hrs.: 9
- O 2 cc-mil/100 in 2 24 hrs. ATM: 40
- Co 2 cc-mil/100 in 2 24 hrs.: 100

Suggested applications for CRYOLITE G-20 molding and extrusion compound:

Tubs and Lids	Bottles
Jars	Medical Trays
Medical Blisters	Pharmaceutical Blisters
Medical Devices	Refrigeration Parts
Appliance Parts	Candy Trays
Toys	Profiles
Tackle Boxes	Sheet
Film	Industrial Applications

CYRO INDUSTRIES: XT X800RG Polymer:

High-Flow Injection Molding Grade

XT polymer has long been recognized for its unique combination of physical properties. XT X is the designation for the new higher flowing grades of this versatile family of molding compounds.

XT X-polymer has been specifically developed to meet the growing market demand for a substantially faster flowing injection molding material which is also economical, tough, transparent and has good chemical resistance. XT X800RG polymer fills difficult molds smoothly and rapidly at lower pressures and temperatures than most conventional compounds. It allows thinner walls, with considerably improved cycle time.

Both transparent and opaque shades can be produced with XT X800RG polymer. Finished parts exhibit smooth, high-gloss surfaces and rich, deep tones.

Optical Properties:
- Color-Natural Polymer: Transparent
- Light Transmission, %: 88
- Haze, %: 8

Physical Properties:
- Izod Impact Strength, Notched
- Ft. lbs./inch of notch (1/4 inch bar):
  - 73F(23C): 1.8
  - 32F(0C): 1.2
  - 0F(-18C): 0.9
  - -40F(-40C): 0.7
- Tensile Strength, psi: 6,300
- Tensile Elongation, psi at yield: 3.5
- Flexural Strength, psi: 9,700
- Flexural Modulus, psi: 320,000
- Specific Gravity: 1.11

Thermal Properties:
- Deflection Temperature (264 psi): 180F(81C)
- Average Melt Index: 8.0

Suggested applications for XT X800RG polymer:

Casette Cartridges	Toys
Refrigeration Parts	Tackle Boxes
Appliance Parts	Utility Boxes
Battery Cases	Industrial Applications

DEGUSSA CORP.: DEGADUR Methacrylate Resins For Surface Protection:

DEGADUR 330SL:
DEGADUR 330SL is based on DEGADUR 330, a highly elastic methacrylate resin with 300% elongation, for extremely impact resistant toppings in high traffic areas such as loading docks and warehouse aisles. It remains resilient even at low temperatures, making it ideal for freezers and cold storage areas. DEGADUR 330SL outperforms other systems in exterior applications, such as bridge and parking deck overlays, due to its UV light stability and freeze/thaw resistance.

DEGADUR 412RO:
DEGADUR 412RO is based on DEGADUR 412, a low viscosity methacrylate resin with 35% elongation, suitable for fast installation of roll-on impermeable coatings with superior chemical resistance against acids and alkalies. It installs quickly and cures within 1-2 hours, making it ideal for use in continuous process areas such as food and chemical plants.

DEGADUR 412SL:
DEGADUR 412SL is a self-leveling topping formulation based on DEGADUR 412 for use in food processing, chemical processing, and other areas requiring protection against chemical attack. Fast curing capabilities allow for rapid installation and minimal down time.

DEGADUR 412TO:
DEGADUR 412TO incorporates colored quartz sands in a trowel-on version which shares similar performance characteristics with other DEGADUR 412-based coatings. Typical uses include commercial kitchens and other areas in which a decorative topping is preferred.

DEGADUR 510PC:
DEGADUR 510PC is based on DEGADUR 510, an elasticized methacrylate binder resin with 195% elongation, for heavy overlays and concrete patching applications. DEGADUR 510PC polymer mortars and concretes resist aging and withstand impact. Full depth repairs are possible in one application.

DEGADUR 520PD:
DEGADUR 520PD is based on DEGADUR 520, a methacrylate sealer resin with high molecular density, high surface hardness, and the best chemical resistance of the DEGADUR systems. DEGADUR 520PD is suitable for many applications ranging from simple dustproofing to sealing of concrete in both interior and exterior surfaces.

DOW CHEMICAL U.S.A.: ATTANE Ultra Low Density Ethylene-Octene Copolymer 4001:

- For very high impact, tear strength, softness
- FDA compliance
- For blown film extrusion

Melt Index: 1.0
Density: 0.912
Slip Additive: None
Antiblock Additive: None

ATTANE 4001 ethylene-octene copolymer is an ultra low density polyethylene having high impact resistance and tear strength combined with improved softness.

Fabrication Conditions for Blown Film Extrusion:
Melt Temperature: 400-475F
Blow-Up Ratio: 2:1
Optimum Gauge Range: 0.5-3.0 mil

This material complies with FDA regulation 21 CFR 177.1520 (c) 3.1 when used unmodified and according to good manufacturing practices for food contact application.

Resin Properties:
Melt Index g/10 min: 1.0
Density, g/cc: 0.912
Tensile Yield, psi (MPa): 1200 (8.3)
Ultimate Tensile, psi (MPa): 3500 (24.1)
Ultimate Elongation, %: 1000
Blown Film Properties @ 1.0 mil:
Dart Impact, g: 800
Puncture Force, ft-lb/in 3: 330
Elmendorf Tear, g: MD: 430
CD: 460
Tensile Yield, psi (MPa): MD: 1160 (8.0)
CD: 1160 (8.0)
Ultimate Tensile, psi (MPa): MD: 8200 (56.5)
CD: 7900 (54.6)
Ultimate Elongation, %: MD: 600
CD: 750
Gloss, 45: 60
Haze, %: 6.5

DOW CHEMICAL U.S.A.: ATTANE Ultra Low Density Ethylene-Octene Copolymer 4001.01:

- For high impact and tear resistance
- FDA compliance
- For blown film extrusion

Melt Index: 1.0
Density: 0.913
Slip Additive: Low
Antiblock Additive: Low

ATTANE 4001.01 ethylene-octene copolymer is an ultra low density polyethylene having high impact resistance and tear strength combined with improved softness. It has low slip & antiblock additives.

Fabrication Conditions for Blown Film Extrusion:
Melt Temperature: 400-475F
Blow-Up Ratio: 2:1
Optimum Gauge Range: 0.5-3.0 mil

This material complies with FDA regulation 21 CFR 177.1520 (c) 3.1 when used unmodified and according to good manufacturing practices for food contact application.

Resin Properties:
Melt Index, g/10 min: 1.0
Density, g/cc: 0.913
Tensile Yield, psi (MPa): 1200
Ultimate Tensile, psi (MPa): 3500
Ultimate Elongation, %: 1000
Blown Film Properties @ 1.0 mil:
Dart Impact, g: 800
Elmendorf Tear, g: MD: 430
CD: 460
Tensile Yield, psi (MPa): MD: 1160 (8.0)
CD: 1160 (8.0)
Ultimate Tensile, psi (MPa): MD: 8200 (56.5)
CD: 5200 (35.8)
Ultimate Elongation, %: MD: 600
CD: 750
Gloss, 45: 55
Haze, %: 7.5

DOW CHEMICAL U.S.A.: ATTANE Ultra Low Density Ethylene-Octene Copolymer 4002:

- For stretch-cling film applications
- FDA compliance
- For cast film extrusion

Melt Index: 3.3
Density: 0.912
Slip Additive: None
Antiblock Additive: None

ATTANE 4002 ethylene-octene copolymer is an ultra low density polyethylene having improved thermal stability. It provides excellent tear and puncture resistance, and outstanding stretchability.

Fabrication Conditions for Cast Film Extrusion:
Melt Temperature: 500-550F
Haul-Off Speed: 400-800 fpm
Optimum Gauge Range: 0.5-2.5 mil

This material complies with FDA regulation 21 CFR 177.1520 (c) 3.1 when used unmodified and according to good manufacturing practices for food contact application.

Resin Properties:
Melt Index g/10 min: 3.3
Density, g/cc: 0.912
Tensile Yield, psi (MPa): 1200 (8.3)
Ultimate Tensile, psi (MPa): 2600 (17.9)
Ultimate Elongation, %: 1000
Cast Film Properties @ 1.0 mil:
Dart Impact, g: 800
Elmendorf Tear, g: MD: 320
CD: 460
Tensile Yield, psi (MPa): MD: 1100 (7.6)
CD: 1000 (6.9)
Ultimate Tensile, psi (MPa): MD: 8000 (55.3)
CD: 6000 (41.5)
Ultimate Elongation, %: MD: 560
CD: 800
Gloss, 45: 95
Haze, %: 0.8

DOW CHEMICAL U.S.A.: ATTANE Ultra Low Density Ethylene-Octene Copolymer 4003:

- For very high impact, puncture resistance
- For exceptional tear strength
- For blown film extrusion

Melt Index: 0.8
Density: 0.905
Slip Additive: None
Antiblock Additive: None

ATTANE 4003 ethylene-octene copolymer is an ultra low density polyethylene offering high melt strength, exceptional flexibility, and superior physical and optical properties for blown film.

Fabrication Conditions for Blown Film Extrusion:
Melt Temperature: 410-475F
Blow-Up Ratio: 1.5:3
Optimum Gauge Range: 0.5-3.0 mil

Resin Properties:
Melt Index g/10 min: 0.8
Density, g/cc: 0.905
Tensile Yield, psi (MPa): 925 (6.4)
Ultimate Tensile, psi (MPa): 3040 (21.0)
Ultimate Elongation, %: 760
Blown Film Properties @ 1.0 mil:
Dart Impact, g: >875
Puncture Force, ft-lb/in 3: >375
Elmendorf Tear, g: MD: 275
CD: 710
Tensile Yield, psi (MPa): MD: 975 (6.7)
CD: 890 (6.2)
Ultimate Tensile, psi (MPa): MD: 8375 (57.9)
CD: 6685 (46.2)
Ultimate Elongation, %: MD: 555
CD: 785
Gloss, 45: 68
Haze, %: 4.7

FIRESTONE SYNTHETIC RUBBER & LATEX CO.: DIENE Polybutadiene Rubber:

35/AC:
Grade: Plastics
Polymerization: Solution Type
Stabilizer: Non-Staining
Specific Gravity: 0.90
Polymer ML4 @ 100C: 35

35NF:
Grade: Rubber
Polymerization: Solution Type
Stabilizer: Non-Staining
Specific Gravity: 0.90
Polymer ML4 @ 100C: 35

55/AC:
Grade: Plastics
Polymerization: Solution Type
Stabilizer: Non-Staining
Specific Gravity: 0.90
Polymer ML4 @ 100C: 55

55NF:
Grade: Rubber
Polymerization: Solution Type
Stabilizer: Non-Staining
Specific Gravity: 0.90
Polymer ML4 @ 100C: 55

DIENE AC polymers--impact modifiers for polystyrene and ABS to produce plastic cups, plates and dinnerware, football helmets, coolers, packaging, toys, furniture, automotive components, and light fixtures. DIENE NF polymers--used to produce tires, retread materials and other molded and extruded rubber products.

FIRESTONE SYNTHETIC RUBBER & LATEX CO.: DURADENE Solution SBR Polymers:

706:
Bound Styrene, %: 23.5
ML4: 55
Stabilizer: Non-Staining

707:
Bound Styrene, %: 23.5
ML4: 45
Stabilizer: Non-Staining

708:
Bound Styrene, %: 25
ML4: 50
Type Oil: Naphthenic
phr Oil: 15
Stabilizer: Slightly Staining

709:
Bound Styrene, %: 35
ML4: 55
Stabilizer: Non-Staining

710:
Bound Styrene, %: 25
ML4: 45
Stabilizer: Non-Staining

711:
Bound Styrene, %: 18
ML4: 75
Stabilizer: Staining

713:
Bound Styrene, %: 35
ML4: 45
Stabilizer: Non-Staining

750:
Bound Styrene, %: 18
ML4: 45
Type Oil: Aromatic
phr Oil: 37.5
Stabilizer: Staining

FIRESTONE SYNTHETIC RUBBER & LATEX CO.: DURADENE Solution SBR Polymers(Continued):

751:
Bound Styrene, %: 25
ML4: 45
Type Oil: Aromatic
phr Oil: 37.5
Stabilizer: Staining

752:
Bound Styrene, %: 30
ML4: 45
Type Oil: Naphthenic
phr Oil: 37.5
Stabilizer: Non-Staining

753:
Bound Styrene, %: 33
ML4: 75
Type Oil: Aromatic
phr Oil: 20
Stabilizer: Staining

755:
Bound Styrene, %: 30
ML4: 70
Type Oil: Naphthenic
phr Oil: 20
Stabilizer: Slightly Staining

706, 707, 708, 709, 710, 711, 713, 752 may be used for mechanical goods; 750, 751, 753, 755 may be used for tire tread and body sidewall compounding.

FIRESTONE SYNTHETIC RUBBER & LATEX CO.: STEREON Block Copolymers:

720A:
Bound Styrene, %: 10
Specific Gravity: 0.92
Melt Index: Thermoset
Shore Hardness: Thermoset

730A:
Bound Styrene, %: 30
Specific Gravity: 0.94
Melt Index: Thermoset
Shore Hardness: Thermoset

840A:
Bound Styrene, %: 43
Specific Gravity: 0.96
Melt Index: 12
Shore Hardness: 85A

881:
Bound Styrene, %: 79
Specific Gravity: 1.01
Melt Index: 8
Shore Hardness: 73D

STEREONS 720A and 730A--impact modifiers for polystyrene, ABS and engineering resins. STEREON 840A impact modifiers for HIPS and polyolefins and as a base polymer for hot melt and pressure sensitive adhesives. STEREON 881--clear injection molding resin for food packaging and medical applications.

HENKEL: MACROMELT Thermoplastic Polyamide Resins:

MACROMELT 6071:
High Performance Adhesives

MACROMELT 6071 polyamide is a low melting, low viscosity thermoplastic resin suggested for nonstructural adhesive applications. Low activation and application temperatures make it ideal for bonding and laminating heat sensitive materials such as paper, foil and foams, particularly where oil resistance is needed.

Specifications:
Ball & Ring Softening Point: 187-212F(86-100C)
Viscosity - Poises at 320F (160C): 5-10
Color Gardner (40% Solids): 12 max.
Typical Properties:
Appearance: Translucent Dark Amber
Flash Point F (C): >500(299)
Adhesive Polymer Strength: Low
Open Time: Long
Application Temp. F (C): 225-275(107-135)

MACROMELT 6206:
High Performance Adhesives

MACROMELT 6206 polyamide is a high melting thermoplastic resin. It exhibits good chemical resistance and adhesion to a wide variety of substrates. This product is suggested for various applications such as paint roller assembly, specialty packaging and leather goods.

Specifications:
Ball & Ring Softening Point: 338-356F(170-180C)
Viscosity - Poises at 410F (210C): 30-50
Color Gardner (40% solids): 8 max.
Typical Properties:
Appearance: Dark Amber
Flash Point F (C): >570(299)
Adhesive Polymer Strength: High
Open Time: Short to Moderate
Application Temp. F (C): 410-450(210-232)

HENKEL: MACROMELT Thermoplastic Polyamide Resins(Continued):

MACROMELT 6211:
High Performance Adhesives

MACROMELT 6211 polyamide is a thermoplastic resin suitable for bonding applications involving a wide range of difficult substrates such as plastics and metals. One specific feature is retention of performance at both high and low in-use temperatures. In particular it exhibits good adhesion to a variety of substrates used in the woodworking industry.

Specifications:
Ball & Ring Softening Point: 284-302F(140-150C)
Viscosity - Poises at 410F(210C): 20-30
Color Gardner (40% Solids): 7 max.
Typical Properties:
Appearance: Translucent Lt. Amber
Adhesive Polymer Strength: Moderate
Open Time: 10 seconds
Application Temp. F (C): 400-420(205-215)
% Water Absorption - 1 day: 1.0
7 days: 2.5

MACROMELT 6238:
High Performance Adhesives

MACROMELT 6238 polyamide is a versatile, thermoplastic resin used for bonding a variety of substrates such as wood, plastics and metals. This adhesive is suggested for the following substrates: rigid and flexible vinyls, ABS, aluminum, steel, glass, ceramics and wood products.

Specifications:
Ball & Ring Softening Point: 271-292F(133-143C)
Viscosity - Poises at 410F (210C): 40-60
Color Gardner (40% Solids): 7 max.
Typical Properties:
Appearance: Translucent Lt. Amber
Flash Point F (C): >570(299)
Adhesive Polymer Strength: Moderate
Open Time: Moderate
Application Temp. F(C): 420-440(215-227)
% Water Absorption - 1 day: 0.7
- 7 days: 1.6

HENKEL: MACROMELT Thermoplastic Polyamide Resins:

MACROMELT 6245:
High Performance Adhesives

MACROMELT 6245 polyamide is a thermoplastic resin with good adhesion to a wide range of plastic materials. Its relatively low melt viscosity makes it easy to dispense, and its long open time can be used to advantage in bonding complex assemblies.

Specifications:
Ball & Ring Softening Point: 230-248F(110-120C)
Viscosity - Poises at 374F (190C): 13-19
Color Gardner (40% solids): 7 max.
Typical Properties:
Appearance: Translucent Amber
Flash Point F(C): >570(299)
Adhesive Polymer Strength: Medium
Open Time: Long
Application Temp. F(C): 380-420(193-215)
% Water Absorption - 1 day: 0.35
- 7 days: 1.15

MACROMELT 6264:
High Performance Adhesives

MACROMELT 6264 polyamide is a light colored thermoplastic resin. Its high viscosity results in a good hot tack at elevated temperatures. It has been designed to exhibit good thermal stability. Wood bonding and hot-fill bagging are excellent applications for this adhesive.

Specifications:
Ball & Ring Softening Point: 305-324F(152-162C)
Viscosity - Poises at 374F(190C): 70-100
Color Gardner (40% solids): 7 max.
Typical Properties:
Appearance: Essentially Colorless
Flash Point F (C): >570(299)
Adhesive Polymer Strength: High
Open Time: Short
Application Temp. F (C): 430-490(221-253)
% Water Absorption - 1 day: 0.5
- 7 days: 1.2

HENKEL: Thermoplastic Polyamide Resins(Continued):

GAX 11-972: **GAX 12-154:**
GAX 11-973: **GAX 12-265:**

Designed to provide excellent cohesion, flexibility and adhesion to various metal foils and plastic films. These resins allow the production of laminating inks and adhesives for dissimilar films and are soluble in alcohols, alcohol/hydrocarbon blends and alcohol/trichloroethane blends. Optimum solubility may be attained by adding water to the solvent systems. These resins can also be used as hot melt adhesives for laminating various films and foils.

GAX 11-973:
Premium resin - excellent heat resistance, adhesive and cohesive strength - highest solution viscosity.

GAX 11-972:
Excellent adhesive and cohesive strength - lower heat resistance and solution viscosity than GAX 11-973.

GAX 12-265:
Intermediate adhesive and cohesive strength - lower heat resistance and solution viscosity than GAX 11-973.

GAX 12-254:
Most economical resin - designed for applications where maximum heat resistance and adhesion are not required or where heat sensitive films are used.

Typical Properties:

GAX 11-972:
Ball & Ring Softening Point, C: 139
Viscosity, Poises at 204C: 62
Color Gardner (40% Solids): 7 max.

GAX 11-973:
Ball & Ring Softening Point, C: 139
Viscosity, Poises at 204C: 140
Color Gardner (40% Solids): 7 max.

GAX 12-154:
Ball & Ring Softening Point, C: 120
Viscosity, Poises at 204C: 35
Color Gardner (40% Solids): 7 max.

GAX 12-265:
Ball & Ring Softening Point, C: 140
Viscosity, Poises at 204C: 32
Color Gardner (40% Solids): 7 max.

HENKEL: VERSAMID Thermoplastic Polyamide Resins:

VERSAMID 744:
Alcohol Soluble

VERSAMID 744 is a new high performance, ethanol soluble polyamide resin. This results in improved gloss, color development and transparency in the ink. These features, plus its outstanding block resistance and high solid capabilities, make VERSAMID 744 a versatile resin choice for meeting the converter's demands.

Specifications:
Brookfield viscosity at 160C-poise: 2.0-5.0
Softening Point C: 120-130
Gardner Color-maximum: 7
Appearance: Clear

VERSAMID 750:
Alcohol Soluble

VERSAMID 750 is a thermoplastic polyamide resin based on dimerized vegetable acid and aliphatic polyamines. This solid resin product is soluble in a variety of alcohol solvents for ink formulation.

VERSAMID 750 is designed for use in premium performance, ethanol reducible flexographic ink vehicles. It is amine terminated for maximum pigment wetability and gloss development.

Inks formulated with VERSAMID 750 exhibit superb alcohol reducibility, low temperature gel resistance, excellent adhesion to treated polyolefin films and high gloss.

Specifications:
Brookfield viscosity at 160C-poise: 6.5-9.0
Softening Point C: 112-121
Gardner Color-maximum: 7
Appearance: Clear

HENKEL: VERSAMID Thermoplastic Polyamide Resins(Continued):

VERSAMID 753:
Alcohol Soluble

VERSAMID 753 is a thermoplastic polyamide resin based on dimerized vegetable acid and aliphatic polyamines. This solid resin product is soluble in a variety of alcohol solvents.

VERSAMID 753 is higher in viscosity than conventional alcohol soluble polyamide resins. Inks based on VERSAMID 753 exhibit premium performance at low formulated costs. Properties of particular importance for flexographic applications include:

- Excellent alcohol reducibility
- Excellent adhesion to high slip polyethylene
- Excellent water resistance
- Low temperature gel resistance
- High gloss
- Low formulated costs

Specifications:
Brookfield viscosity at 160C-poise: 15-20
Softening point C: 104-114
Gardner color, maximum: 8

VERSAMID 754:
Alcohol Soluble

VERSAMID 754 is a thermoplastic polyamide resin based on dimerized vegetable acid and aliphatic polyamines. This solid resin product is soluble in a variety of alcohol solvents for ink formulations.

VERSAMID 754 is designed for use in premium performance, ethanol reducible flexographic ink vehicles. It is acid terminated.

Inks formulated with VERSAMID 754 exhibit superb alcohol reducibility, low temperature gel resistance, excellent adhesion to treated pololefin films and high gloss.

Specifications:
Brookfield viscosity at 160C-poise: 5-8
Softening Point C: 112-121
Gardner Color-maximum: 7
Appearance: Clear

HENKEL CORP.: VERSAMID Thermoplastic Polyamide Resins(Continued):

VERSAMID 756:
Alcohol Soluble

VERSAMID 756 is a thermoplastic polyamide resin based on dimerized vegetable acid and aliphatic polyamines. This solid resin product is soluble in a variety of alcohol solvents.

VERSAMID 756 is designed for use in premium performance, ethanol reducible flexographic ink vehicles. Inks formulated with VERSAMID 756 exhibit superb alcohol reducibility, low temperature gel resistance, excellent adhesion to treated polyolefin films and high gloss.

Specifications:
Brookfield viscosity at 160C-poise: 4-7
Softening Point C: 105-115
Gardner Color-maximum: 7
Appearance: Clear

VERSAMID 757:
Alcohol Soluble

VERSAMID 757 is a thermoplastic polyamide resin based on dimerized vegetable acid and aliphatic polyamines. This solid resin product is soluble in a variety of alcohol solvents for ink formulation.

VERSAMID 757 is lower in viscosity than conventional alcohol soluble polyamide resins. Inks based on VERSAMID 757 exhibit low temperature gel resistance, excellent adhesion to treated polyolefin films and high gloss.

Specifications:
Brookfield viscosity at 160C-poise: 3-5
Softening Point C: 112-121
Gardner color-maximum: 7
Appearance: Clear

VERSAMID 759:
Alcohol Soluble

VERSAMID 759 is a thermoplastic polyamide resin which can be formulated into high solid inks and varnishes. The small amount of solvent required to achieve press viscosities will greatly reduce solvent emissions and assist in meeting air quality standard regulations.

Specifications:
Brookfield viscosity at 120C, poise: 2.5 Max.
Softening Point C: 105-115
Gardner Color-maximum: 7
Appearance: Clear

HENKEL CORP.: VERSAMID Thermoplastic Polyamide Resins (Continued):

VERSAMID 900:

VERSAMID 900 is a thermoplastic polyamide based on dimerized vegetable acid and aliphatic polyamines. This solid resin product has limited solubility in organic solvents.

VERSAMID 900 is designed for use in applications where adhesion is of particular importance.

Specifications:

Brookfield viscosity at 200C-poise: 3-4
Softening Point C: 170-190
Gardner Color-maximum: 12
Appearance: Clear

VERSAMID 930:

Co-Solvent Soluble

VERSAMID 930 is a thermoplastic polyamide resin based on dimerized vegetable acid and aliphatic polyamine. This solid resin product is soluble in a "co-solvent" system-an alcohol and a hydrocarbon for ink formulations. VERSAMID 930 is also used in the shoe industry for thermoforming and side lasting applications.

VERSAMID 930 solutions give viscosities higher than VERSAMID 963 or VERSAMID 940. Inks formulated with this resin show excellent adhesion to a variety of substrates, good resistance properties and high gloss.

VERSAMID 930 is also useful in formulations for anti-static coatings, thixotropic paints and over print varnishes.

Specifications:

Brookfield viscosity at 160C-poise: 21-27
Softening Point C: 105-115
Gardner Color-maximum: 7
Appearance: Clear

VERSAMID 940:

Co-Solvent Soluble

VERSAMID 940 is a thermoplastic polyamide resin based on dimerized vegetable acid and aliphatic polyamine. This solid resin product is soluble in a "co-solvent" system-an alcohol and a hydrocarbon for ink formulations. VERSAMID 940 is also used in the shoe industry for thermofolding and side lasting applications.

VERSAMID 940 solutions show lower viscosity than VERSAMID 963 or VERSSAMID 930. Inks formulated with this resin show excellent adhesion to a variety of substrates, good resistance properties and high gloss.

VERSAMID 940 is also useful in formulations for anti-static coatings, thixotropic paints and over print varnishes.

Specifications:

Brookfield viscosity at 160C-poise: 12-18
Softening Point C: 105-115
Gardner Color-maximum: 7
Appearance: Clear

HENKEL: VERSAMID Thermoplastic Polyamide Resins(Continued):

VERSAMID 963:
Co-Solvent Soluble

VERSAMID 963 is a thermoplastic polyamide resin based on dimerized vegetable acid and aliphatic polyamine. This solid resin product is soluble in a "co-solvent" system-an alcohol and a hydrocarbon for ink formulations.

VERSAMID 963 solutions give viscosities higher than VERSAMID 940, but lower than VERSAMID 930. Inks formulated with this resin show excellent adhesion to a variety of substrates, good resistance properties and high gloss.

VERSAMID 963 is also useful in formulations for anti-static coatings, thixotropic paints and over print varnishes.

Specifications:
Brookfield viscosity at 160C - poise: 15.0-22.0
Softening Point, ASTM E-28, Modified: 105-115
Gardner Color-maximum: 7
Appearance: Clear

VERSAMID 1655:
Thermographic Resins

VERSAMID 1655 is a thermoplastic polyamide resin based on dimerized vegetable acid and aliphatic polyamines. This solid resin product has exceptional melt and flow characteristics. VERSAMID 1655 is used in raised printing applications (thermographic) where its low color is important.

Typical Properties:
Brookfield viscosity at 160C-poise: 3.0
Softening Point C: 115
Gardner Color-maximum: 3
Appearance: Clear

HULS AMERICA INC.: Synthetic Resins:

Synthetic Resin AP:

Synthetic Resin AP is a neutral, unsaponifiable ketone resin. It is generally used in combination with other binders. The resin is supplied in the form of pastilles.

Characteristics:

Density at 20C: g/ml: 1.19
Softening range: C: 7.6-8.2
Iodine Colour number of a 50% solution: mg 1/100 ml: 1-2.5
Acid Number: mg KOH/g: 0.1

Applications:

Synthetic Resin AP is suitable for the manufacture of clear and pigmented nitrocellulose wood and metal finishes.

Because of its favourable price and low colour number Synthetic Resin AP forms a good base for the manufacture of light clear lacquers as well as white enamels. These lacquers are generally characterised by good adhesion. Synthetic Resin AP improves the pigment loading capacity of nitrocellulose, so that even at high pigmentation an excellent gloss can still be achieved.

Synthetic Resin AP dissolves easily in esters, ketones, glycol ethers, and glycol ether acetates, as well as in aromatic hydrocarbons, but has only slight solubility in alcohols.

Synthetic Resin BL 1201/2:

Synthetic Resin BL 1201/2 is a urethane-modified ketone aldehyde resin which, as a hard resin, is used together with other film formers for the manufacture of fast drying paints and printing inks. The resin is supplied as a 50% solution in ethyl acetate. It has very good light fastness, an inert behaviour and differs from other ketone resins by its unusually high softening point.

Property:

Stoving residue: % by wt.: approx. 45
Density at 20C*: g/cm 3: 0,963
Viscosity at 20C*: mPa s: 400-430
Colour (APHA): mg/Pt/l: 55-60
Softening range (100% resin): C: 155-170
Flash point: C: <21

* 25% solution of the resin in ethyl acetate

Solubility:

Synthetic Resin BL 1201/2 is readily soluble in alcohols, esters and ketones but is insoluble in aliphatic and aromatic hydrocarbons.

HULS AMERICA INC.: Synthetic Resins(Continued):

Synthetic Resin SK:

Synthetic Resin SK is a neutral, unsaponifiable, ethanol soluble, modified ketone resin which is very light in colour and lightfast.

It is generally used in combination with other binders. The resin is supplied in the form of pastilles.

Characteristics:

Density at 20C: g/ml: 1.15
Softening range: C: 110-120
Iodine Colour Number of a 50% solution: mg 1/100 ml: 0-1
Hydroxyl Number: mg KOH/g: 300-320

Applications:

Synthetic Resin SK can be used for the manufacture of all types of nitrocellulose lacquers. Further special applications result from its compatibility with oil modified alkyds and with urea-formaldehyde and phenol-formaldehyde condensation resins. When Synthetic Resin SK is used in such systems it frequently improves the adhesion and gloss.

Adhesion Resin LTH:

A hard, special-purpose supplementary resin designed to improve the initial, long-term and interlayer adhesion of paints based on vinyl chloride copolymers and a number of other binders to metallic and mineral surfaces and to certain plastics.

Chemical classification:

A special purpose, styrene-free, unsaturated polyester resin with high resistance to saponification.

Property:

Iodine colour number (50% in toluene): mg 1/100 ml: 1-3
Apparent bulk density: g/cm 3: 1.225-1.235
Viscosity at 20C (50% in toluene): mPa s: 100-300
Flow time at 20C (50% in toluene): s: 35+-10
Melting point: C: approx. 100
Acid number: mg KOH/g: 14-17
Hydroxyl number: mg KOH/g: approx. 20

Adhesion Resin LTH is a highly lightfast and weather resistant hard resin. It is a supplementary resin which improves the adhesion of numerous paints to metallic and mineral surfaces and to some plastics. The hardness of the paint film and the gloss are simultaneously increased while a higher solids content of the given paint is realised without any significant rise in the viscosity.

INTERPLASTIC CORP.: COREZYN Marble Resins and Casting Resins:

COREZYN 93-BA-034:
This is a popular "onyx" resin. It is capable of making extremely low color marble, with outstanding pigment acceptance and veining. This resin is produced with a polymeric additive specifically designed to insure excellent filler wet out and bright, clear colors.

COREZYN 92-BA-001:
COREZYN 90-BA-032:
Two versions of high viscosity, low monomer content marble resins that will consistently deliver excellent results in tub production, or in the manufacture of other similar large thick castings. They are capable of high filler loadings and exhibit very low shrink.

COREZYN 91-BB-073:
This medium viscosity marble resin also boasts a high capacity for filler loading. It has very good thermal shock resistance and high heat distortion, with excellent ANSI 2124.3 "Hot-Cold" cycle test results, both in the laboratory and in the field. An excellent fast production resin.

Cultured Marble 94-BA-028:
This is a superior cycling "two fer" resin, capable of fast production of either cast marble or onyx bowls. It is a medium viscosity, low color resin that has delivered excellent field and lab test results in both these kinds of fabrication, cultured marble and cultured onyx. Polymeric additives of Interplastic's own formulation - and manufacture - are used to maximize filler wet out, and to insure void-free, low-color results.

COREZYN 90-BA-039:
This successful medium viscosity marble resin is outstanding for high volume production. Low color, high filler acceptance and fast cycle times, coupled with its very forgiving formula, make this a flexible and efficient choice.

INTERPLASTIC CORP.: COREZYN Marble Resins and Casting Resins (Continued):

Marble:

91-BB-073:
Viscosity, cps: 650
Color: red-brown
Stability (Months): 3
Gel Time - Resin: 13 min.
Hardness Filled: 40-45

92-BA-321:
Viscosity, cps: 3200
Color: pink
Stability (Months): 3
Gel Time - Resin: 8 min.
Hardness Filled: 40-45

90-BA-037:
Viscosity, cps: 3200
Color: pink
Stability (Months): 3
Gel Time - Resin: 13 min.
Hardness Filled: 40-45

90-BA-039:
Viscosity, cps: 1200
Color: pink
Stability (Months): 3
Gel Time - Resin: 18-20 min.

90-BA-043:
Viscosity, cps: 1200
Color: pink
Stability (Months): 3
Gel Time - Resin: 12 min.

Onyx:

94-BA-034:
Viscosity, cps: 425
Color: lt. pink
Stability (Months): 3
Gel Time - Resin: 13 min.

Dual Purpose:

94-BA-028:
Viscosity, cps: 650
Color: lt. peach
Stability (Months): 3
Gel Time - Resin: 16 min.

INTERPLASTIC CORP.: COREZYN Casting Systems Resins:

Furniture:

5-BA-156:
Viscosity, cps: 60
Color: red-brown
Stability (Months): 3
Gel Time - Resin: 4-5 min.
Gel Time - Filled: 7 min.
1/8" Cured Clear Casting:
Tensile Elongation: 40-50%

5-CA-074:
Viscosity, cps: 60
Color: amber
Stability (Months): 3
Gel Time - Resin: Varies
1/8" Cured Clear Casting:
Tensile Elongation: 40-50%

Deburring:

97-BB-071:
Viscosity, cps: 260
Color: red-brown
Stability (Months): 3
Gel Time - Resin: 6 min.
Hardness Filled Barcol 934-1: 45-50

97-DB-032:
Viscosity, cps: 260
Color: amber
Stability (Months): 3
Gel Time - Resin: Varies
Hardness Filled Barcol 934-1: 45-50

97-BB-062:
Viscosity, cps: 260
Color: brown
Stability (Months): 3
Gel Time - Resin: 8 min.
Hardness Filled Barcol 934-1: 50-55

Hobby:

95-BA-026:
Viscosity, cps: 650
Color: lt. blue
Stability (Months): 2
Gel Time - Resin: 20 min.

INTERPLASTIC CORP.: COREZYN BMC/SMC Molding Resins:

COREZYN 39-DZ-215:
This is a "Class A Surface" sheet molding compound resin--an unsaturated polyester polymer solution in styrene monomer intended specifically for molding applications requiring a Class A finish. It is a very high rectivity resin yielding high cross-link density and superior hot strength.
It is a thickenable system with predictable SMC characteristics.
COREZYN 39-DZ-215, in low profile formulations containing COREZYN 20-LP-229 or 20-LP-257 additives, is used extensively for appliance and houseware components.

COREZYN 42-DQ-612:
This BMC/SMC resin is highly resistant to chemical corrosion and thermal oxidation. It is an excellent choice for microwave food service dishes, stain and heat resistant microwave cookware, and other sheet molding applications requiring high corrosion and temperature resistance.
COREZYN 42-DZ-612 is pigmentable, and exhibits outstanding compatibility with polyethylene or polystyrene low profile, low shrink additives.

COREZYN 42-DZ-607:
This is a tough, resilient resin that is ideal in formulating compounds for structural members or other applications where superior physical properties and good electrical capabilities are needed. It is an excellent blending resin for modifying physical properties, and is often used in the structural grade, high (60%) reinforcement containing SMC. SMC formulations utilizing 42-DZ-607 exhibit good mechanical and electrical properties at elevated temperatures.

COREZYN 40-DZ-349:
This general-purpose BMC/SMC isophthalic resin is a versatile "workhorse". It is a tough, high impact, high strength system intended for thickened or unthickened formulations. Parts made from this resin will show excellent physical properties, paintability, and electrical resistance. It is often used for electrical components, circuit boards, automotive parts and appliance housings, in a wide variety of formulations requiring different thickening rates, gel times, and molding cycles.

COREZYN 47-DZ-612:
This is a resin for excellent weathering and chemical resistant SMC formulations. Used in outdoor equipment covers, chemical plant equipment and in applications requiring high heat service and dimensional stability at higher temperatures.

INTERPLASTIC CORP.: COREZYN BMC/SMC Molding Resins(Continued):

COREZYN 42-DQ-372:
This is a thickenable bulk molding compound resin intended for small part production and used frequently in the manufacture of food contact surface utensils such as plates, cups, and microwave oven serving pieces. It is often used in conjunction with polystyrene syrups such as COREZYN 20-LP-257. This carefully controlled polyester resin is analyzed and monitored throughout its production to insure compliance with the Code of Federal Regulation requirements for food contact surfaces.

COREZYN VE 8900:
An INTERPLASTIC patented thickenable Vinyl Ester molding compound resin. For BMC and SMC systems where thickenable corrosion resistant systems are required. For high-strength and chemical resistance.

COREZYN 47-DZ-027:
This is a wet molding system resin with high physical properties and a wide variety of gel times and cure rates available. It is currently in use in many different reinforcement and thickness configurations, and performs well as a general-purpose SMC/BMC resin, in addition to wet molding applications.
It is pigmentable and available with or without internal mold release agents.

COREZYN 46-DZ-011:
This Fire Retardant SMC/BMC Resin has excellent mechanical properties as well as Class I fire retardance (ASTM E84 of 25 or less) with a suitable formulation.

COREZYN 42-OP-109:
A one component low profile, low shrink SMC resin system. Used in pigmented systems varying from large, two-compartment sinks to small food service trays. This system is easily modified for a variety of compound formulations and part sizes.

INTERPLASTIC CORP.: COREZYN BMC/SMC Molding Resins(Continued):

COREZYN Bulk Molding and Sheet Molding Compounds

42-DZ-612:

Liquid Resin Properties:
Viscosity, Brookfield: 1,000-1,300 cps
Percent Non-Volatile Material: 63-65%
Acid Value: 14-19
Percent Moisture Content: 8.9-9.2
SPI Gel Time (180F Bath, 1% BPO): 25-30 minutes
Peak Time: 28-33 minutes
Peak Temperature: 430F
Typical Properties of 1/8" Cured Clear Castings:
Flexural Strength, psi, ASTM D790: 14,500
Flexural Modulus, psi, ASTM D790: 5.01 x 10 5
Tensile Strength, psi, ASTM D638: 8,300
Tensile Modulus, psi, ASTM D638: 4.76 x 10 5
Tensile Elongation: 1.19%
Heat Distortion Temperature @ 264 pso, ASTM D648: 125C
Barcol Hardness (934-1), ASTM D2583: 45-47
Water Absorption, 90F, DI Water, 24 hours: 0.1%
Percent Shrink: 5.0%

40-DZ-349:

Liquid Resin Properties:
Viscosity, Brookfield, 77F: 3,500-4,000 cps
Percent Non-Volatile Material: 71-72%
Acid Value: 14-18
Percent Moisture Content: 0.15% (max.)
SPI Gel Time (180F Bath, 1% BPO): 4-6 minutes
Peak Time: 6-8 minutes
Peak Temperature: 410F (min.)
Typical Properties of 1/8" Cured Clear Castings:
Flexural Strength, psi, ASTM D790: 18,000
Flexural Modulus, psi, ASTM D790: 4.4 x 10 5
Tensile Strength, psi, ASTM D638: 11,600
Tensile Modulus, psi, ASTM D638: 9.0 x 10 5
Tensile Elongation: 5.0%
Heat Distortion Temperature @ 264 pso, ASTM D648: 80C
Barcol Hardness (934-1), ASTM D2583: 36-38
Water Absorption, 90F, DI Water, 24 hours: 0.2%
Percent Shrink: 3.67%

INTERPLASTIC CORP.: COREZYN BMC/SMC Molding Resins(Continued):

COREZYN Bulk Molding and Sheet Molding Compound Resins(Continued)

42-DZ-607:

Liquid Resin Properties:
Viscosity, Brookfield, 77F: 2,000-2,400 cps
Percent Non-Volatile Material: 64-65%
Acid Value: 13-17
Percent Moisture Content: 0.15% (max.)
SPI Gel Time (180F Bath, 1% BPO): 5-7 minutes
Peak Time: 7-9 minutes
Peak Temperature: 420F (min.)
Typical Properties of 1/8" Cured Clear Castings:
Flexural Strength, psi, ASTM D790: 17,300
Flexural Modulus, psi, ASTM D790, 4.58 x 10 5
Tensile Strength, psi, ASTM D638: 7,900
Tensile Modulus, psi, ASTM D638: 6.18 x 10 5
Tensile Elongation: 1.6%
Heat Distortion Temperature @ 264 pso, ASTM D648: 119C
Barcol Hardness (934-1), ASTM D2583: 38-42
Water Absorption, 90F, DI Water, 24 hours: 0.1%
Percent Shrink: 5.0%

39-DZ-215:

Liquid Resin Properties:
Viscosity, Brookfield, 77F: 600-700 cps
Percent Non-Volatile Material: 61-62%
Acid Value: 17-21
Percent Moisture Content: 1000 ppm (max.)
SPI Gel Time (180F Bath, 1% BPO): 30-33 minutes
Peak Time: 33-36 minutes
Peak Temperature: 450F
Thickening Behavior Characteristic:
'A' Value: 10-40 minutes
'B' Value: 150-300,000 cps
Typical Properties of 1/8" Cured Clear Castings:
Flexural Strength, psi, ASTM D790: 13,000
Flexural Modulus, psi, ASTM D790: 4.69 x 10 5
Tensile Strength, psi, ASTM D638: 5,000
Tensile Modulus, psi, ASTM D638: 5.58 x 10 5
Tensile Elongation: 0.6%
Heat Distortion Temperature @ 264 pso, ASTM D648: 150C
Barcol Hardness (934-1), ASTM D2583: 50
Water Absorption, 90F, DI Water, 24 hours: 0.1%
Percent Shrink: 7.0%

INTERPLASTIC CORP.: COREZYN BMC/SMC Molding Resins(Continued):

COREZYN Bulk Molding and Sheet Molding Compound Resins(Continued)

42-DQ-372:

Liquid Resin Properties:
Viscosity, Brookfield, 77F: 1900-2100 cps
Percent Non-Volatile Material: 70-72%
Acid Value: 10-15
Percent Moisture Content: 0.15% (max.)
SPI Gel Time (180F Bath, 1% BPO): 5-6 minutes
Peak Time: 7-8 minutes
Peak Temperature: 430F (min.)
Typical Properties of 1/8" Cured Clear Castings:
Flexural Strength, psi, ASTM D790: 15,000
Flexural Modulus, psi, ASTM D790: 4.6 x 10 5
Tensile Strength, psi, ASTM D638: 6,000
Tensile Modulus, psi, ASTM D638: 5.39 x 10 5
Tensile Elongation: 1.0%
Heat Distortion Temperature @ 264 pso, ASTM D648: 115C
Barcol Hardness (934-1), ASTM D2583: 40-42
Water Absorption, 90F, DI Water, 24 hours: 0.1%
Percent Shrink: 5.0%

MCWHORTER: Copolymers:

Vinyl Toluene, Styrene, Acrylic:

MACOPOL 3002:
Wt/Gal: 7.35
% NVM: 50
Solvents: VMP
Gardner Color: 5 Max
Acid # (Solids): 10 Max
Viscosity: Z-Z2
Reduced Viscosity: S-U @ 40% VMP
F Seta Flash Point: 55
% Oil: 30
Oil Type: Special FA
Mod. Type: VT
A vinyl-toluenated alkyd which has snap-dry, has some flexibility and excellent clarity. As a sole vehicle, it provides economical industrial finishes for a variety of uses and application techniques.

MACOPOL 3003:
Wt/Gal: 7.42
% NVM: 60
Solvents: VMP
Gardner Color: 6 Max
Acid # (Solids): 10 Max
Viscosity: Y-Z1
F Seta Flash Point: 55
% Oil: 36
Oil Type: Linseed
Mod. Type: ST/VT
A vinyl-toluenated linseed oil which dries very quickly to a hard, tough film. It has a light color and excellent clarity. Very suitable for aerosols and sanding sealers. Can be formulated to a high gloss.

MACOPOL 3009:
Wt/Gal: 7.40
% NVM: 50
Solvents: VMP
Gardner Color: 4 Max
Acid # (Solids): 12 Max
Viscosity: Y-Z
Reduced Viscosity: K-M @ 40% VMP
F Seta Flash Point: 55
% Oil: 29
Oil Type: TOFA
Mod. Type: VT
A vinyl-toluenated tall oil alkyd which emphasizes its compatibility with medium oil alkyds. It imparts the normal characteristics of a VT: snap-dry, high gloss and hardness.

MCWHORTER: Copolymers(Continued):

Vinyl Toluene, Styrene, Acrylic(Continued):

MACOPOL 3017:
Wt/Gal: 8.05
% NVM: 50
Solvents: Xylol
Gardner Color: 7 Max
Acid # (Solids): 10 Max
Viscosity: U-W
F Seta Flash Point: 80
% Oil: 35
Oil Type: Soya
Mod. Type: ST/Acrylic
An acrylic-modified alkyd used in air-dried or heat-cured enamels. Coatings made with this resin are noted for their durability, high gloss, color retention, depth of build, recoatability and early mar resistance.

MACOPOL 3020:
Wt/Gal: 7.61
% NVM: 61
Solvents: VMP
Gardner Color: 5 Max
Acid # (Solids): 10 Max
Viscosity: Z-Z2
F Seta Flash Point: 55
% Oil: 31
Oil Type: Soya
Mod. Type: VT
A vinyl-toluenated soya alkyd that dries extremely fast, has exceptional water resistance, and good adhesion to plastics and styrofoam. It is a good surface wetter and a very compatible aerosol vehicle.

MACOPOL 3025:
Wt/Gal: 8.12
% NVM: 60
Solvents: Xylol
Gardner Color: 8 Max
Acid # (Solids): 10 Max
Viscosity: Z2-Z5
Reduced Viscosity: G-I @ 40% Xylol
F Seta Flash Point: 80
% Oil: 32
Oil Type: Soya
Mod. Type: Styrene
A styrenated soya alkyd which can be used to formulate fast-drying primers and topcoats. Its pigment-wetting and surface wetting capabilities are superior to most other vehicles of its type. Also provides good recoatability.

MCWHORTER: Copolymers(Continued):

Vinyl Toluene, Styrene, Acrylic(Continued):

MACOPOL 3039:
Wt/Gal: 7.78
% NVM: 75
Solvents: Naphtha Spirits
Gardner Color: 6 Max
Acid # (Solids): 2 Max
Viscosity: Z-Z2
Reduced Viscosity: H @ 60% in Naphtha Spirits
F Seta Flash Point: 104
Oil Type: Linseed
Mod. Type: VT
A fast dry, high solids vinyl-toluenated alkyd with very low viscosity and complete aliphatic solubility for 380 grams/liter sanding sealers and enamels.

MACOPOL 3077:
Wt/Gal: 7.50
% NVM: 60
Solvent: VMP
Gardner Color: 6 Max
Acid # (Solids): 8 Max
Viscosity: Z-Z2
F Seta Flash Point: 55
% Oil: 32
Oil Type: Soya
Mod. Type: VT/Acrylic
A very hard, very fast acrylic-modified vinyl-toluenated alkyd which has good pigment wetting for extremely high gloss enamels. It offers excellent wood sealing with good early sanding properties. A very high quality aerosol resin.

MACOPOL 3105:
Wt/Gal: 8.20
% NVM: 80+-2
Solvents: Xylol
Gardner Color: 3-4
Acid # (Solids): 10 Max
Viscosity: Z3-Z4
High solids vinyl-toluenated soya alkyd with a quick dry and hardness development. Its fast reduction characteristic allows for 3.0 VOC formulations. It also has excellent aliphatic solubility.

MCWHORTER: Copolymers(Continued):

Vinyl Toluene, Styrene, Acrylic(Continued):

MACOPOL 3106:
Wt/Gal: 8.25
% NVM: 77-80
Solvents: Xylol/MEK
Gardner Color: 7 Max
Acid # (Solids): 5-10
Viscosity: Z3-Z5
F Seta Flash Point: 22
% Oil: 37
Oil Type: Soya
Mod. Type: VT
High solids vinyl-toluenated soya alkyd with quick dry and hardness development. Its fast reduction characteristic allows for 3.5 VOC formulations. Can also be used in aerosols.

MACOPOL 3118:
Wt/Gal: 8.30
% NVM: 60
Solvents: Xylol/MS
Gardner Color: 6 Max
Acid # (Solids): 5 Max
Viscosity: X-Y
F Seta Flash Point: 80
Oil Type: Special FA
Mod. Type: ST/Acrylic
A higher-solids acrylic-modified alkyd which is of automotive quality. It has excellent exterior durability, gloss, and gloss retention. It can be air-dried or heat-cured to a deep, high gloss.

MACOPOL 3122:
Wt/Gal: 8.50
% NVM: 70
Solvents: Xylol
Gardner Color: 7 Max
Acid # (Solids): 4 Max
Viscosity: Z-Z2
Reduced Viscosity: U-W @ 65% Xylol
F Seta Flash Point: 80
Oil Type: TOFA
Mod. Type: Acrylic
A high solids acrylic alkyd with excellent durability, gloss and gloss retention. It can be used to formulate 3.5 VOC coatings at sprayable viscosities. It dries to a high, deep gloss.

MCWHORTER: Copolymers(Continued):

Vinyl Toluene, Styrene, Acrylic(Continued):

MACOPOL 3140:
Wt/Gal: 8.25
% NVM: 80
Solvents: Xylol
Gardner Color: 5 Max
Acid # (Solids): 8 Max
Viscosity: Z-Z2
F Seta Flash Point: 80
Oil Type: Soya
Mod. Type: Styrene
A high solids styrenated alkyd which formulates as low as 2.8 VOC. It dries quickly to a deep gloss film with excellent film durability.

MACOPOL 3151:
Wt/Gal: 8.58
% NVM: 70
Solvents: MPK/Xylol
Gardner Color: 6 Max
Acid # (Solids): 4 Max
Viscosity: X-Z1
F Seta Flash Point: 46
Oil Type: TOFA
Mod. Type: Acrylic
A high solids acrylic alkyd with snap-dry, excellent exterior durability, and early water resistance. It formulates easily to 3.5 VOC at good spray viscosity.

MACOPOL 8104:
Previous Product Name: VARCOPOL 485-50VM
Wt/Gal: 7.73
% NVM: 50
Solvents: VMP
Gardner Color: 6 Max
Acid # (Solids): 5 Max
Viscosity: Z3-Z5
F Seta Flash Point: 52
% Oil: 38
Oil Type: Linseed
Mod. Type: VT
A vinyl-toluene modified alkyd with a quick dry to an unusually hard film. It is ideal for formulating sanding sealers at low solids.

MCWHORTER: Specialty Resins:

Epoxy Solutions:

EPOMAC 4010:
Wt/Gal: 9.10
% NVM: 75
Solvents: Xylol
Gardner Color: 5 Max
WPE: 450-525
Viscosity: Z2-Z6
F Seta Flash Point: 80
A resin which offers excellent water and chemical resistance. It finds application in such diverse uses as tank linings, a modifier for baking systems, and as a crosslinker with polyesters and polyamides.

EPOMAC 4070:
Wt/Gal: 8.80
% NVM: 55
Solvents: Toluol/PMA
Gardner Color: 5 Max
WPE: 1670-2000
Viscosity: Z1-Z4
F Seta Flash Point: 40
Is a higher moleculer weight vehicle, which offers somewhat better corrosion resistance than lower molecular weight epoxy solutions. Areas of application would include can coatings and appliance finishes.

EPOMAC 4090:
Wt/Gal: 8.30
% NVM: 40
Solvents: Arom. 100/EP
Gardner Color: 3 Max
WPE: 2500-4000
Viscosity: V-X
F Seta Flash Point: 116
Offers the highest epoxide-equivalent weight of McWhorter's epoxy line. This, in turn, provides the highest degree of corrosion and alkali resistance, and forms the hardest films. EPOMAC 4090 is widely used in coil coating primers.

MCWHORTER: Specialty Resins(Continued):

Epoxy Esters:

MAXVAR 2504:
Wt/Gal: 7.65
% NVM: 60
Solvents: MS
Gardner Color: 6 Max
Acid # (Solids): 10 Max
Viscosity: V-X
Reduced Viscosity: B-C @ 45% MS
F Seta Flash Point: 105
% Oil: 37
Oil Type: TOFA
Mod. Type: Epoxy
A very light-colored epoxy ester which has good wetting properties and good flow. Solvent tolerance is very good, so it has application as an aerosol vehicle. It is used for appliance touch-up and maintenance coatings.

MAXVAR 2505:
Wt/Gal: 8.00
% NVM: 50
Solvents: Xylol
Gardner Color: 12 Max
Acid # (Solids): 7 Max
Viscosity: W-Y
F Seta Flash Point: 80
% Oil: 41
Oil Type: TOFA
Mod. Type: Epoxy
An outstanding epoxy ester. Its supplier adhesion, flexibity and chemical resistance make it suitable for many applications, including baking finishes. It has good compatibility with other alkyds and with melamines.

MAXVAR 2515:
Wt/Gal: 8.90
% NVM: 75
Solvents: Xylol
Gardner Color: 8 Max
Acid # (Solids): 5-8
Viscosity: Z-Z2
F Seta Flash Point: 80
% Oil: 50
Oil Type: Linseed
Mod. Type: Epoxy
A high solids epoxy ester with superior adhesion, flexibility and chemical resistance. It can be used in both air-dry and bake systems.

MCWHORTER: Specialty Resins(Continued):

Epoxy Esters(Continued):

MAXVAR 2527:
Wt/Gal: 7.25
% NVM: 40
Solvents: MS/Glycol Ether
Gardner Color: 6 Max
Acid # (Solids): 8-12
Viscosity: C-E
F Seta Flash Point: 105
% Oil: 57
Oil Type: TOFA
Mod. Type: Epoxy/Driers
An excellent epoxy ester varnish. It has light color, excellent clarity, very high gloss, and superior abrasion resistance. It has good recoatability and meets the requirements of the Maple Flooring Manufacturing Association. It contains driers.

MAXVAR 2534:
Wt/Gal: 8.40
% NVM: 70
Solvents: EP
Gardner Color: 8 Max
Acid # (Solids): 9 Max
Viscosity: Z-Z2
Reduced Viscosity: T-W @ 60% in EP
F Seta Flash Point: 120
Oil Type: TOFA
Mod. Type: Epoxy
A high solids epoxy ester with very good adhesion to most substrates. Principally for industrial baking finishes with low cure response suitable for plastics.

MAXVAR 2582:
Wt/Gal: 7.65
% NVM: 60
Solvents: MS
Gardner Color: 6 Max
Acid # (Solids): 10 Max
Viscosity: V-X
Reduced Viscosity: B-C @ 45% MS
F Seta Flash Point: 105
% Oil: 37
Oil Type: TOFA
Mod. Type: Epoxy
A very light-colored epoxy ester which has good wetting properties and good flow. Solvent tolerance is very good, so it has application as an aerosol vehicle. It is used for appliance touch-up and maintenance coatings.

MCWHORTER: Specialty Resins(Continued):

Epoxy Esters(Continued):

MAXVAR 2583:
Wt/Gal: 7.60
% NVM: 55
Solvents: MS/Glycol Ether
Gardner Color: 15 Max
Viscosity: F-H
F Seta Flash Point: 105
% Oil: 61
Oil Type: Linseed/Tung
Mod. Type: Epoxy Driers Present
A linseed-tung phenolic spar varnish which is superior to most clear finishes. Contains U.V. absorber and driers and is a superb marine finish. Water and alkali resistance are outstanding.

MAXVAR 2590:
Wt/Gal: 8.05
% NVM: 60
Solvents: Arom. 100
Gardner Color: 8 Max
Acid # (Solids): 10 Max
Viscosity: V-X
F Seta Flash Point: 110
% Oil: 56
Oil Type: TOFA
Mod. Type: Epoxy
An epoxy ester with superior adhesion, flexibility and chemical resistance, for baking and air-dry systems. It has good compatibility with alkyds and melamines.

MAXVAR 8279:
Previous Product Name: VARKYD 17-60E
Wt/Gal: 7.65
% NVM: 60
Solvents: MS
Gardner Color: 8 Max
Acid # (Solids): 8 Max
Viscosity: Z-Z2
Reduced Viscosity: H-J @ 40% in MS
F Seta Flash Point: 100
% Oil: 50
Oil Type: TOFA
Mod. Type: Epoxy
An epoxy ester with excellent wetting and superior adhesion properties that gives high alkali, water, and solvent resistance for a wide range of industrial and trade sales applications.

MCWHORTER: Specialty Resins(Continued):

Vinyl Oxazoline Esters:

CHEMACOIL 100:
Wt/Gal: 7.80
% NVM: 100
Gardner Color: 9 Max
Acid # (Solids): 10 Max
Viscosity: F-I
F Seta Flash Point: 100+
% Oil: 93
Oil Type: TOFA
Mod. Type: Oxazoline
An outstanding vehicle for modifying exterior latex paints. It provides a multitude of benefits: 100% solids at low viscosity, good adhesion to chalky surfaces, very good pigment wetting, good brushing and flow qualities, and exceptional package stability.

CHEMACOIL 101:
Wt/Gal: 7.80
% NVM: 100
Gardner Color: 10 Max
Acid # (Solids): 10 Max
Viscosity: G-I
F Seta Flash Point: 100+
% Oil: 93
Oil Type: Linseed
Mod. Type: Oxazoline
Has a somewhat higher level of vinyl oxazoline. It finds application in very high quality industrial finishes, where it heightens gloss, wets pigments to give better color development, and improves adhesion over poorly prepared surfaces.

Plasticizer:

DURAMAC 2056:
Wt/Gal: 8.90
% NVM: 80
Solvents: Xylol/MPK
Gardner Color: 3 Max
Acid # (Solids): 12 Max
Viscosity: Z3-Z5
F Seta Flash Point: 46
% Oil: 43
Oil Type: Coconut
A higher-solids coconut oil alkyd for excellent plasticizing of nitrocellulose and other lacquer-types below 550 grams/liter for fully compliant coatings. Also good for light-colored baking enamels.

MCWHORTER: Specialty Resins(Continued):

Plasticizer(Continued):

DURAMAC 2698:
Wt/Gal: 8.70
% NVM: 60
Solvents: Xylol
Gardner Color: 3 Max
Acid # (Solids): 12 Max
Viscosity: Z2-Z4
F Seta Flash Point: 80
% Oil: 32
Oil Type: Coconut
An exceptionally light-colored coconut oil alkyd which also has very good clarity. An excellent product for plasticizing nitrocellulose and other lacquers.

Flow and Bodying Vehicles:

MAXVAR 2503:
Wt/Gal: 7.28
% NVM: 54
Solvents: MS
Gardner Color: 8 Max
Acid # (Solids): 8 Max
Viscosity: T-U
F Seta Flash Point: 105
% Oil: 99
Oil Type: Linseed/Tung
A specially processed polymeric vehicle for use in exterior house paints and architectural formulas to impart practical thixotropy, easy brushing, better leveling, and less sagging, without impairing stability, gloss or durability.

MAXVAR 2587:
Wt/Gal: 6.90
% NVM: 30
Solvents: MS
Gardner Color: 9 Max
Acid # (Solids): 12-25
Viscosity: Soft Gel
F Seta Flash Point: 105
% Oil: 96
Oil Type: Linseed
A chemically-treated oil which is made to a clear light-colored, flowing gel. It has the ability to impart a creamy puff to a product, while promoting brushing and flow. It is a powerful suspending agent.

MCWHORTER: Specialty Resins(Continued):

Hammer-Tone Resin:

HAMATROL 2487:
Wt/Gal: 8.10
% NVM: 50
Solvents: Xylol/VMP
Gardner Color: 8 Max
Acid # (Solids): 12 Max
Viscosity: V-X
F Seta Flash Point: 60-70
% Oil: 35
Oil Type: TOFA
Mod. Type: Rosin
A one-of-a-kind vehicle designed and controlled for one-coat hammer finishes. It allows an easily regulated pattern, while contributing outstanding adhesion, gloss, and salt spray resistance. It can also be used in aerosols.

Wrinkle Varnish:

MAXVAR 2598:
Wt/Gal: 7.57
% NVM: 60
Solvents: Toluene
Gardner Color: 13 Max
Viscosity: N-P
F Seta Flash Point: 52
% Oil: 40
Oil Type: Tung
Mod. Type: Rosin
A very high quality tung oil varnish which produces uniform medium wrinkle patterns. In a solvent blend meeting Rule 66, this vehicle is suitable for air-dry and bake. It also has aerosol application.

MCWHORTER: Specialty Resins(Continued):

Universal Grinding Vehicle:

REZIMAC 2497:
Wt/Gal: 8.40
% NVM: 80
Solvents: Xylol
Gardner Color: 10 Max
Acid # (Solids): 15-20
Viscosity: X-Z1
F Seta Flash Point: 80
% Oil: 39
An effective grinding vehicle, compatible with a wide variety of resins used in industrial and trade sales paint. It has very good pigment wetting properties, permitting fluid dispersions for easy handling. It also has film-forming properties.

ACRYLAMAC 5297:
Wt/Gal: 8.80
% NVM: 70
Solvents: EP
Gardner Color: 2 Max
Acid # (Solids): 36-40
Viscosity: Z2-Z4
F Seta Flash Point: 128
A medium-high solids acrylic grinding vehicle with hydroxyl functionality and very good pigment wetting properties.

NATROCHEM, INC.: Chemicals for Industry:

GALEX Stabilized Rosins:
GALEX is a disproportionated rosin used primarily as a tackifier in pressure sensitive tapes and adhesives. Other areas include it's use as an acid in emulsifier systems, hot melt systems and inks.

NATRO-REZ Thermoplastic Resin:
A complete line of coumarone indene resins from 10C to 120C softening point as available. Uses include processing and tackifying nitrile rubber as well as other polymers, paints, inks and adhesives.
The NATRO-REZ TP series are terpene phenolic resins used as tackifiers in most polymers to increase building tack as well as in rubber cements, and hot melt adhesives.

Rosin Oils, Pitches & Specialties:
Rosin oils are used in inks, as tackifiers and reclaiming oils for rubber, low shear greases, building product adhesives and specialty coatings.
Various Rosin Pitches are used in the "lost wax" casting process, as hot melt adhesives in the construction of loom reeds and in specialty pressure sensitive adhesives.
Other Rosin based specialties include VENICE Turpentine and concrete form release oils.

GATAK KE:
GATAK KE resins are a new line of dark colored polyesters for use in processing oil resistant polymers such as nitriles, neoprene, and Hydrin. These resins show comparable properties to lighter colored polyesters selling from two (2) to five (5) times their price.
GATAK GW-O is a special ester of rosin for use in EPDM polymers to increase tack and improve resilience.

NEVILLE CHEMICAL CO.: Coumarone-Indene Resins:

CUMAR resins exhibit excellent resistance to alkalis, dilute acids, and moisture. The Gardner colors of CUMAR grades range from 7 to 14. Ring & Ball softening points of these resins range from 10C to 155C. They have low molecular weights, ranging from 580 to 1090. High-melting, high-viscosity grades are available. These resins are suggested for use in adhesives, aluminum paints, varnishes, rotogravure inks, and rubber compounds.

CUMAR R-1:
Softening Point, R&B, C: 126
Color, Gardner (50% in Toluene): 8
Specific Gravity @ 25C: 1.13
Iodine Number, Wijs: 42
Flash Point, F (COC): 480
Molecular Weight No. Average: 665
Form: Solid/Flaked

CUMAR R-3 (W-1):
Softening Point, R&B, C: 126
Color, Gardner (50% in Toluene): 9
Specific Gravity @ 25C: 1.13
Iodine Number, Wijs: 45
Flash Point, F (COC): 500
Molecular Weight No. Average: 735
Form: Flaked

CUMAR R-5 (W-1 1/2):
Softening Point, R&B, C: 126
Color, Gardner (50% in Toluene): 10
Specific Gravity @ 25C: 1.13
Iodine Number, Wijs: 45
Flash Point, F (COC): 500
Molecular Weight No. Average: 750
Form: Solid/Flaked

CUMAR R-6 (W-2, 2 1/2):
Softening Point, R&B, C: 126
Color, Gardner (50% in Toluene): 11
Specific Gravity @ 25C: 1.13
Iodine Number, Wijs: 45
Flash Point, F (COC): 500
Molecular Weight No. Average: 755
Form: Solid/Flaked

NEVILLE CHEMICAL CO.: Coumarone-Indene Resins(Continued):

CUMAR LX-509:
Softening Point, R&B, C: 155
Color, Gardner (50% in Toluene): 8
Specific Gravity @ 25C: 1.14
Iodine Number, Wijs: 35
Flash Point, F (COC): 560
Molecular Weight No. Average: 1090
Form: Solid/Flaked

CUMAR R-7:
Softening Point, R&B, C: 106
Color, Gardner (50% in Toluene): 8
Specific Gravity @ 25C: 1.14
Iodine Number, Wijs: 45
Flash Point, F (COC): 515
Molecular Weight No. Average: 580
Form: Solid/Flaked

CUMAR R-9:
Softening Point, R&B, C: 112
Color, Gardner (50% in Toluene): 8
Specific Gravity @ 25C: 1.14
Iodine Number, Wijs: 55
Flash Point, F (COC): 515
Molecular Weight No. Average: 610
Form: Solid/Flaked

CUMAR R-10 (V-1):
Softening Point, R&B, C: 107
Color, Gardner (50% in Toluene): 10
Specific Gravity @ 25C: 1.14
Iodine Number, Wijs: 45
Flash Point, F (COC): 520
Molecular Weight No. Average: 640
Form: Solid/Flaked

CUMAR R-11 (V-1 1/2):
Softening Point, R&B, C: 112
Color, Gardner (50% in Toluene): 12
Specific Gravity @ 25C: 1.09
Iodine Number, Wijs: 100
Flash Point, F (COC): 460
Molecular Weight No. Average: 700
Form: Solid/Flaked

NEVILLE CHEMICAL CO.: Coumarone-Indene Resins(Continued):

CUMAR R-12 (V-2, V-2 1/2):
Softening Point, R&B, C: 112
Color, Gardner (50% in Toluene): 12
Specific Gravity @ 25C: 1.09
Iodine Number, Wijs: 100
Flash Point, F (COC): 515
Molecular Weight No. Average: 580
Form: Solid/Flaked

CUMAR R-12A (V-3):
Softening Point, R&B, C: 112
Color, Gardner (50% in Toluene): 12
Specific Gravity @ 25C: 1.09
Iodine Number, Wijs: 100
Flash Point, F (COC): 510
Molecular Weight No. Average: 600
Form: Solid/Flaked

CUMAR R-13:
Softening Point, R&B, C: 100
Color, Gardner (50% in Toluene): 8
Specific Gravity @ 25C: 1.12
Iodine Number, Wijs: 39
Flash Point, F (COC): 495
Molecular Weight No. Average: 734
Form: Solid/Flaked

CUMAR R-14 (MH-1):
Softening Point, R&B, C: 100
Color, Gardner (50% in Toluene): 9
Specific Gravity @ 25C: 1.12
Iodine Number, Wijs: 60
Flash Point, F (COC): 495
Molecular Weight No. Average: 730
Form: Solid/Flaked

CUMAR R-15 (MH-1 1/2):
Softening Point, R&B, C: 100
Color, Gardner (50% in Toluene): 12
Specific Gravity @ 25C: 1.12
Iodine Number, Wijs: 60
Flash Point, F (COC): 495
Molecular Weight No. Average: 730
Form: Solid/Flaked

NEVILLE CHEMICAL CO.: Coumarone-Indene Resins(Continued):

CUMAR R-16 (MH-2, MH-2 1/2):
Softening Point, R&B, C: 103
Color, Gardner (50% in Toluene): 12
Specific Gravity @ 25C: 1.12
Iodine Number, Wijs: 60
Flash Point, F (COC): 495
Molecular Weight No. Average: 730
Form: Solid/Flaked

CUMAR R-16A (MH-3):
Softening Point, R&B, C: 103
Color, Gardner (50% in Toluene): 12
Specific Gravity @ 25C: 1.07
Iodine Number, Wijs: 100
Flash Point, F (COC): 450
Molecular Weight No. Average: 660
Form: Solid/Flaked

CUMAR R-17 (RH-17):
Softening Point, R&B, C: 76
Color, Gardner (50% in Toluene): 13
Specific Gravity @ 25C: 1.10
Iodine Number, Wijs: 65
Flash Point, F (COC): 390
Molecular Weight No. Average: 500
Form: Solid

CUMAR R-19:
Softening Point, R&B, C: 58
Color, Gardner (50% in Toluene): 14
Specific Gravity @ 25C: 1.06
Iodine Number, Wijs: 65
Flash Point, F (COC): 450
Molecular Weight No. Average: 590
Form: Solid

CUMAR R-21:
Softening Point, R&B, C: 45
Color, Gardner (50% in Toluene): 11
Specific Gravity @ 25C: 1.05
Iodine Number, Wijs: 50
Flash Point, F (COC): 400
Molecular Weight No. Average: 525
Form: Solid

NEVILLE CHEMICAL CO.: Coumarone-Indene Resins(Continued):

CUMAR R-27:
Softening Point, R&B, C: 10
Color, Gardner (50% in Toluene): 11
Specific Gravity @ 25C: 1.08
Iodine Number, Wijs: 60
Flash Point, F (COC): 350
Molecular Weight No. Average: 290
Form: Liquid

CUMAR R-28:
Softening Point, R&B, C: 33
Color, Gardner (50% in Toluene): 12
Specific Gravity @ 25C: 1.08
Iodine Number, Wijs: 60
Flash Point, F (COC): 380
Molecular Weight No. Average: 425
Form: Liquid

CUMAR R-29, 25:
Softening Point, R&B, C: 28
Color, Gardner (50% in Toluene): 12
Specific Gravity @ 25C: 1.03
Iodine Number, Wijs: 70
Flash Point, F (COC): 365
Molecular Weight No. Average: 455
Form: Liquid

CUMAR R-29, 10:
Softening Point, R&B, C: 12
Color, Gardner (50% in Toluene): 12
Specific Gravity @ 25C: 1.01
Iodine Number, Wijs: 70
Flash Point, F (COC): 345
Molecular Weight No. Average: 400
Form: Liquid

CUMAR P-10:
Softening Point, R&B, C: 10
Color, Gardner (50% in Toluene): 8
Specific Gravity @ 25C: 1.04
Iodine Number, Wijs: 60
Flash Point, F (COC): 425
Molecular Weight No. Average: 330
Form: Liquid

CUMAR P-25:
Softening Point, R&B, C: 25
Color, Gardner (50% in Toluene): 8
Specific Gravity @ 25C: 1.06
Iodine Number, Wijs: 60
Flash Point, F (COC): 450
Molecular Weight No. Average: 350
Form: Liquid

C.J. OSBORN: Copolymers:

These products are modified alkyds. Their modifications may be VT, styrene, acrylic or silicone resins. The VT and styrene copolymers are known for their outstanding speed of dry under ambient conditions and may be used in aerosol coatings, sanding sealers, furniture, machinery enamels and hammertone finishes. Silicone alkyds are known for high heat resistant coatings and exterior durability on metallic surfaces.

Silicone Modified Polyesters:

13-A-6119:
Silicone modified polyester
% Non-volatile: 48-50
Solvent: PM acetate
Viscosity: D-G
Color (Gardner): 7 max.
Acid Number (Solids): 10 max.
Modifying Oil: None
WPG: 9.05
Silicone modified saturated polyester designed for high performance and thermal stability.

13-A-6739:
Silicone modified polyester
% Non-Volatile: 64-66
Solvent: PM acetate
Viscosity: Y-Z2
Color (Gardner): 3 max.
Acid Number (Solids): 10 max.
Modifying Oil: None
WPG: 9.35
Premium industrial coatings, high temperature resistance.

13-A-5523:
Silicone modified polyester
% Non-Volatile: 64-66
Solvent: PM acetate
Viscosity: Z-Z3
Color (Gardner): 3 max.
Acid Number (Solids): 10 max.
Modifying Oil: None
WPG: 9.40
This polyester has a 50% silicone modification. Therefore, it is designed for high performance coatings. High solids should be of help to the formulator.

C.J. OSBORN: Copolymers(Continued):

Silicone Modified Polyesters(Continued):

13-A-5566:
Silicone polyester
% Non-Volatile: 49-51
Solvent: Methyl propyl ketone
Viscosity: A1-B
Color (Gardner): 3 max.
Acid Number (Solids): 10 max.
Modifying Oil: None
WPG: 8.18
Any application requiring toughness, abrasion resistance, color retention at high temp. and good durability.

13-A-6109:
Silicone polyester copolymer
% Non-Volatile: 49-51
Solvent: N-hexyl carbitol
Viscosity: G-J
Color (Gardner): 3 max.
Acid Number (Solids): 10 max.
Modifying Oil: None
WPG: 8.80
Any application requiring toughness, abrasion resistance, color retention at high temp. and good durability.

13-A-6114:
Silicone modified polyester
% Non-Volatile: 48-50
Solvent: PM acetate
Viscosity: D-G
Color (Gardner): 4 max.
Acid Number (Solids): 10 max.
Modifying Oil: None
WPG: 9.05
This product is a silicone modified saturated polyester designed for high performance and thermal stability.

13-A-5013:
Silicone polyester resin
% Non-Volatile: 49-51
Solvent: PM acetate
Viscosity: E-H
Color (Gardner): 4 max.
Acid Number (Solids): 10 max.
Modifying Oil: None
WPG: 9.07
High solid copolymer designed for maximum heat stability.

C.J. OSBORN: Copolymers(Continued):

Silicone Modified Polyesters and Alkyds:

13-3164:
Silicone modified long oil soya alkyd
% Non-Volatile: 59-61
Solvent: Exempt MS
Viscosity: U-W
Color (Gardner): 7 max.
Acid Number (Solids): 10 max.
Modifying Oil: Soya
WPG: 7.93
This long oil soya alkyd may be used for superior exterior coatings on metal marine finishes, trim and trellis enamels and used to upgrade conventional long oil alkyd based enamels. This may also be used to meet Federal spec. TT-E-490E.

13-A-3491:
Silicone polyester copolymer
% Non-Volatile: 48-50
Solvent: Cello. acetate 98%
Butanol 2%
Viscosity: D-F
Color (Gardner): 4 max.
Acid Number (Solids): 10 max.
Modifying Oil: None
WPG: 8.95
Any application requiring toughness, abrasion resistance and color retention at high temperature and good durability. This product could be used in appliances, outdoor signs & coil coatings. There are some electrical properties.

13-0098:
Silicone modified resin
% Non-Volatile: 49-51
Solvent: Exempt MS
Viscosity: J-L
Color (Gardner): 7 max.
Acid Number (Solids): 10 max.
Modifying Oil: Linseed/Soya
WPG: 7.70
This resin is recommended for high temperature aluminum pigmented paints. It exhibits excellent durability and air-drying characteristics.

C.J. OSBORN: Copolymers(Continued):

Silicone Modified Polyesters and Alkyds(Continued):

13-0640:
Silicone modified alkyd
% Non-Volatile: 59-61
Solvent: Exempt VM&P Naphtha
Viscosity: U-W
Color (Gardner): 7 max.
Acid Number (Solids): 10 max.
Modifying Oil: Soya
WPG: 7.80
Recommended for high temp. aluminum pigmented paints. Exhibits excellent durability and air-dry characteristics. May also be used with marine finishes and exterior coatings on metal or wood.

13-A-1736:
Silicone modified polyester
% Non-Volatile: 49-51
Solvent: MIBK
Viscosity: D-F
Color (Gardner): 3 max.
Acid Number (Solids): 10 max.
Modifying Oil: None
WPG: 8.10
Designed for heat resistance, hardness and color retention.

13-2700:
Linseed modified silicone copolymer
% Non-Volatile: 49-51
Solvent: Xylol
Viscosity: S-V
Color (Gardner): 8 max.
Acid Number (Solids): 15 max.
Modifying Oil: Linseed
WPG: 8.30
This product meets TT-P-28 compositioning for high heat aluminum paints. It has excellent weatherability.

C.J. OSBORN: Copolymers(Continued):

Vinyl Toluene:

13-A-6169:
Vinyl toluene copolymer
% Non-Volatile: 59-61
Solvent: Exempt MS
Viscosity: Z-Z2
Color (Gardner): 7 max.
Acid Number (Solids): 10 max.
Modifying Oil: Linseed
WPG: 7.54
This vinyl toluene is a fast drying copolymer dispersed in exempt mineral spirits and is suitable for sanding sealers, aerosol paints & wood finishes.

13-A-6170:
Vinyl toluene copolymer
% Non-Volatile: 59-61
Solvent: Exempt VM&P
Viscosity: X-Y
Color (Gardner): 7 max.
Modifying Oil: Linseed
WPG: 7.50
This vinyl toluene is particularly designed for fast drying sanding sealers.

13-A-5422:
Vinyl toluene alkyd copolymer
% Non-Volatile: 49-51
Solvent: Exempt VM&P
Viscosity: Y-Z1
Color (Gardner): 5 max.
Acid Number (Solids): 10 max.
Modifying Oil: Soya
WPG: 7.50
Very fast drying copolymer suitable for aerosol overprint and sanding sealers.

13-A-5444:
Vinyl toluene alkyd copolymer
% Non-Volatile: 49-51
Solvent: Exempt MS
Viscosity: V-X
Color (Gardner): 6 max.
Modifying Oil: TOFA
WPG: 7.48
Quick dry machinery enamels.

C.J. OSBORN: Copolymers(Continued):

Vinyl Toluene(Continued):

13-A-4731:
Vinyl toluene modified alkyd
% Non-Volatile: 49-51
Solvent: 66/3 VM&P Naphtha
Viscosity: Z2-Z4
Color (Gardner): 3 max.
Acid Number (Solids): 10 max.
Modifying Oil: TOFA
WPG: 7.39
Sanding sealers, aerosol coatings, paper coatings & quick dry enamels.

13-2916:
Vinyl toluene modified alkyd
% Non-Volatile: 59-61
Solvent: Exempt VM&P Naphtha
Viscosity: Z-Z2
Color (Gardner): 5 max.
Acid Number (Solids): 15 max.
Modifying Oil: TOFA
WPG: 7.70
This vinyl toluene copolymer may be used in quick air dry pigmented coatings. For aerosol coatings, for air dry primers, machinery enamels and drum enamels. It is an excellent product for sanding sealers and top coats for wood finishes, paper coating, gloss, and satin finishes.

Silicone Alkyds:

13-A-7019:
Silicone alkyd
% Non-Volatile: 49-51
Solvent: Exempt MS, Exempt VM&P, Xylol
Viscosity: V-X
Color (Gardner): 6 max.
Acid Number (Solids): 10 max.
Modifying Oil: Linseed
WPG: 7.57
Silicone alkyd finds important usage in high heat aluminum paints. It is prepared for Rule 66 compliance and is designed for the requirements of TT-P-28E.

C.J. OSBORN: Copolymers(Continued):

Silicone Alkyds(Continued):

13-A-4283:
Silicone epoxy modified alkyd
% Non-Volatile: 49-51
Solvent: Exempt MS, Xylol
Viscosity: Z-Z2
Color (Gardner): 9 max.
Acid Number (Solids): 12 max.
Modifying Oil: Linseed
WPG: 7.70
Exterior durability, increased temperature resistance, and excellent adhesion on metal.

13-A-3979:
Silicone alkyd copolymer
% Non-Volatile: 69-71
Solvent: Diethylene glycol monobutyl ether & acetate
Viscosity: Z4-Z6
Color (Gardner): 9 max.
Acid Number (Solids): 15 max.
Modifying Oil: Linseed
WPG: 9.08
Used in high heat aluminum paints, this product has excellent weatherability.

13-0678:
Silicone alkyd copolymer
% Non-Volatile: 59-61
Solvent: Exempt MS
Viscosity: Y-Z1
Color (Gardner): 7 max.
Acid Number (Solids): 10 max.
Modifying Oil: Soya
WPG: 8.00
Superior exterior coating on metal or wood marine finishes.

Acrylic Copolymer:

13-A-5390:
Acrylic copolymer resin
% Non-Volatile: 40-51
Solvent: Xylol
Viscosity: U-W
Color (Gardner): 6 max.
Acid Number (Solids): 16 max.
Modifying Oil: Soya, dehydrated castor
WPG: 8.07
An excellent resin for industrial metal coating.

C.J. OSBORN: Copolymers(Continued):

Acrylic Copolymer(Continued):

13-A-8625:
Acrylic copolymer
% Non-Volatile: 49-51
Solvent: Xylol
Viscosity: L-S
Color (Gardner): 5 max.
Acid Number (Solids): 16 max.
Modifying Oil: Dehydrated castor
WPG: 8.10
This is an excellent resin for industrial metal coatings with fast dry, outstanding color & color retention. Provides good rapid cure for fast production schedules with good resistance to overbake. It is recommended also for metal furniture, cabinets and similar applications including machinery and implement enamel.

13-A-8633-A:
Acrylic copolymer
% Non-Volatile: 49-51
Solvent: Solvesso 150
Viscosity: U-X
Color (Gardner): 5 max.
Acid Number (Solids): 15 max.
Modifying Oil: Dehydrated castor
WPG: 8.20
This acrylic copolymer has been designed for a broad spectre of applications in the metal decorating field. It is characterized by very rapid cure, excellent levelling, fabrication and processing. Gloss, color retention and flexibility are also excellent pigmented systems as well as clear finishing varnishes for regular overprint. Coatings may be formulated using this resin.

13-A-5509:
Acrylic copolymer
% Non-Volatile: 74-76
Solvent: Xylol
Viscosity: Z5-Z7
Color (Gardner): 7 max.
Modifying Oil: Dehydrated castor
WPG: 8.52
Industrial metal coatings, machinery and implement enamel.

C.J. OSBORN: Copolymers(Continued):

Acrylic Copolymers(Continued):

13-A-5080:
Acrylic copolymer resin
% Non-Volatile: 49-51
Solvent: Xylol
Viscosity: U-W
Color (Gardner): 6 max.
Acid Number (Solids): 16 max.
Modifying Oil: Dehydrated castor
WPG: 8.07
An excellent resin for industrial metal coatings, fast dry, outstanding color and color retention. It provides rapid cure for fast production schedules with good resistance to overbake. Recommended for metal furniture, cabinets and similar applications. Also for machinery and implement enamels.

13-A-5324:
Acrylic copolymer resin
% Non-Volatile: 49-51
Solvent: Xylol
Viscosity: T-V
Color (Gardner): 5 max.
Acid Number (Solids): 16 max.
Modifying Oil: Dehydrated castor
WPG: 8.10
Excellent resin for industrial metal coatings, fast dry, outstanding color and color retention. Provides rapid cure for fast production schedules with good resistance to overbake. Recommnded for metal furniture, cabinets and similar applications. Also for machine and implement enamels.

13-A-0257:
Acrylic copolymer resin
% Non-Volatile: 49-50
Solvent: Solvesso 150
Viscosity: U-X
Color (Gardner): 5 max.
Acid Number (Solids): 9-16
Modifying Oil: DCO
WPG: 8.25
More flexible version of 13-8633.

C.J. OSBORN: Copolymers(Continued):

Acrylic Copolymers(Continued):

13-1491:
Acrylic silicone copolymer
% Non-Volatile: 49-51
Solvent: PM acetate, High flash naphtha
Viscosity: Z2-Z5
Color (Gardner): 3 max.
Acid Number (Solids): 8 max.
Modifying Oil: None
WPG: 8.75
Acrylic silicone copolymers designed for high heat resistance and color retention.

Styrenated Alkyd:

13-A-4014:
Styrenated alkyd
% Non-Volatile: 54-56
Solvent: Xylol
Viscosity: X-Z
Color (Gardner): 6 max.
Acid Number (Solids): 12 max.
Modifying Oil: Soya
WPG: 8.13
Color, hardness, gloss and speed of drying suggest applications in an industrial and implement vehicle; toy enamels and hammertone finishes.

13-A-4565:
Styrenated alkyd
% Non-Volatile: 49-51
Solvent: Xylol
Viscosity: X-Z
Color (Gardner): 4 max.
Acid Number (Solids): 9 max.
Modifying Oil: Soya
WPG: 8.10
This product is a styrenated alkyd with a low viscosity reduction and excellent color.

C.J. OSBORN: Specialties:

The following are special purpose vehicles designed to meet specific requirements. These include wrinkle finishes, both regular and high solid; bronzing liquid, chlorinated alkyds; resin solutions; reactive polymers and emulsifiable resin esters that may be used as latex modifiers.

07-202A:
Modified alkyd wrinkle resin
% Non-Volatile: 49-51
Solvent: VMP Naphtha, Xylol, Aromatic solvent
Viscosity: U-W
Color (Gardner): 11 max.
Acid Number (Solids): 36 max.
Modifying Oil: Tung
WPG: 7.70
This product is a standard of synthetic wrinkle vehicles. Formulations may be supplied.

07-RF-0245:
Emulsifiable resin ester
% Non-Volatile: 97-99
Solvent: None
Viscosity: 120-240 poises
Color (Gardner): 6 max.
Acid Number (Solids): 12 max.
Modifying Oil: TOFA
WPG: 8.20
This product is used to upgrade exterior latex paints. It improves resistance to chipping and peeling and imparts better adhesion to chalky and glossy surfaces. Also, better mildew resistance is obtained.

07-501:
Hammer finish alkyd (non-styrenated)
% Non-Volatile: 49-51
Solvent: Xylol
Viscosity: R-T
Color (Gardner): 7-9
Acid Number (Solids): 6-9
Modifying Oil: Blend
WPG: 7.88
This resin has been designed specifically for use in one-coat baking hammer finishes. In combination with amine resins, it has improved solvent resistance and marproofness.

C.J. OSBORN: Specialties(Continued):

07-1187:
Resin solution
% Non-Volatile: 15-17
Solvent: Toluene, ethanol, acetone
Viscosity: B-D
Color (Gardner): 1
Modifying Oil: None
WPG: 7.45
CAB solution.

07-2534:
Short oil bronzing liquid
% Non-Volatile: 49-51
Solvent: Exempt MS
Viscosity: A-
Color (Gardner): 18+
Acid Number (Solids): 4 max.
Modifying Oil: Linseed
WPG: 7.50
Bronzing liquid for radiators, burial vaults, etc. It may be used as a general purpose bronzing liquid.

07-A-3423:
High solid, wrinkle vehicle
% Non-Volatile: 79-81
Solvent: MIBK
Viscosity: Y-Z1
Color (Gardner): 12 max.
Acid Number (Solids): 36
WPG: 8.67
High solid, low VOC applications.

07-A-3542:
Chlorinated alkyd
% Non-Volatile: 59-61
Solvent: Exempt MS
Viscosity: U-W
Color (Gardner): 10 max.
Acid Number (Solids): 6 max.
Modifying Oil: Safflower
WPG: 8.35
Safflower version of 07-A-3550.

C.J. OSBORN: Specialties(Continued):

07-A-3550:
Chlorinated alkyd
% Non-Volatile: 59-61
Solvent: Exempt MS
Viscosity: U-W
Color (Gardner): 10 max.
Acid Number (Solids): 6 max.
Modifying Oil: Soya
WPG: 8.35
This meets MTL-R-21417 Federal specification.

07-A-5836:
Reactive polymer
% Non-Volatile: 69-71
Solvent: Solvesso 150
Viscosity: Z2-Z4
Color (Gardner): 3 max.
Acid Number (Solids): 16 max.
Modifying Oil: None
WPG: 8.95
Designed for applications where flexibility and reasonable hardness are important requirements.

07-8438:
Alkyd wrinkle vehicle
% Non-Volatile: 49-51
Solvent: 81.2 Exempt VMP Naphtha
10.3 Toluol
8.5 Xylol
Viscosity: U-X
Color (Gardner): 10 max.
Acid Number (Solids): 36 max.
Modifying Oil: Tung
WPG: 7.60
07-A-8438 is a special form of MIRASOL 07-202A designed to permit wrinkle enamel formulations which will meet Rule 66.

C.J. OSBORN: Varnishes:

This series conforms to a variety of end uses such as spar varnish for interior/exterior use, mixing varnish for aluminum paint, requirements for Federal and State Highway Association and uses that specify fast dry, excellent chemical resistance, hardness and high gloss. Its primary use is for wood.

12-2411:
Gold metal lacquer
% Non-Volatile: 49-51
Solvent: MS 66/3
Viscosity: 50"+-5" in #4 Ford cup
Color (Gardner): 18
Modifying Oil: Tung/Linseed
WPG: 7.40
Contains driers.

12-A-2659:
Oleoresinous phenolic varnish
% Non-Volatile: 59-61
Solvent: Exempt MS, Dipentene
Viscosity: R-T
Color (Gardner): 8 max.
Modifying Oil: Tung
WPG: 7.52
This is a pure phenolic tung oil varnish with excellent toughness, chemical resistance, gloss and weathering characteristics. It may be used in spar varnishes, porch and deck paints and floor finishes.

12-A-3583:
Vacuum metallizing varnish
% Non-Volatile: 29-31
Solvent: Exempt MS
Viscosity: A1-A4
Color (Gardner): 15 max.
Modifying Oil: Soya
WPG: 7.08
May be used as a base coat over plastic in vacuum metallizing finishes.
Contains driers.

C.J. OSBORN: Varnishes(Continued):

12-A-3703:
Tung oil varnish
% Non-Volatile: 53-55
Solvent: Exempt MS
Viscosity: F-H
Color (Gardner): 9 max.
Modifying Oil: Tung oil
WPG: 7.44
General purpose interior/exterior varnish.

12-A-3922:
Spar varnish
% Non-Volatile: 50-52
Solvent: Exempt
Viscosity: F-H
Color (Gardner): 10 max.
Modifying Oil: Tung/Soya
WPG: 7.50
Exterior and interior wood finishes.

12-A-4294:
Phenolic varnish
% Non-Volatile: 57-59
Solvent: Non photo-chemically reactive
Viscosity: C-F
Color (Gardner): 12 max.
Modifying Oil: Tung/Linseed & Castor
WPG: 7.40
This varnish meets the requirements for TTV119D phenolic spar varnish of 90.105 and a SSU at 210-980-1020 SEL.
Contains driers.

12-A-4507:
Phenolic varnish
% Non-Volatile: 59-61
Solvent: Exempt MS
Viscosity: L-N
Color (Gardner): 12 max.
Modifying Oil: Tung/Linseed
WPG: 7.65
This phenolic varnish meets the requirements for DOD V15218C Type II, a mixing phenolic varnish.

C.J. OSBORN: Varnishes(Continued):

12-A-4518:
Spar varnish
% Non-Volatile: 50-52
Solvent: Exempt MS
Viscosity: B-E
Color (Gardner): 14 max.
Modifying Oil: Tung oil
WPG: 7.25
This is designed to meet the requirements for State Highway Association, M69-70 Type I aluminum paint.

12-A-5299:
Black varnish
% Non-Volatile: 45-49
Solvent: MS, aromatic hydrocarbons
Viscosity: 65"-85" #4 Ford cup
Color (Gardner): Black
Modifying Oil: Linseed
WPG: 7.39
This black varnish finds use in the preparation of stain and low cost high gloss black enamels. It is based on Gilsonite asphaltum.

12-A-5396:
Oleoresinous tung oil varnish
% Non-Volatile: 49-51
Solvent: Aliphatic and aromatic hydrocarbons
Viscosity: V-X
Color (Gardner): 8 max.
Modifying Oil: Tung
WPG: 7.46
Oleoresinous tung oil varnish may be used for furniture applications.

12-A-6438:
Phenolic tung oil varnish
% Non-Volatile: 53-55
Solvent: Exempt MS
Viscosity: H-J
Color (Gardner): 8 max.
Modifying Oil: Tung
WPG: 7.38
This is a fairly short oil varnish designed for fast drying, high chemical and abrasion resistance with excellent gloss.

C.J. OSBORN: Varnishes(Continued):

12-A-6500:
Spar varnish
% Non-Volatile: 49-51
Solvent: Exempt MS
Viscosity: A1-A3
Color (Gardner): 6 max.
Acid Number (Solids): 12 max.
Modifying Oil: Soya/Linseed
WPG: 7.37
Exterior wood finishes.

12-7933:
Oleoresinous varnish
% Non-Volatile: 57-59
Solvent: Exempt MS
Viscosity: A2-A
Color (Gardner): 13 max.
Modifying Oil: Tung/Linseed
WPG: 7.45
Designed for stains and fillers where wood penetration is of prime importance.
Contains driers.

QUANTUM: PETROTHENE Polyolefins for Extrusion Coating:

PETROTHENE Low Density Polyethylene Resins:

NA 203:
Density g/cm 3: .915
Melt Index g/10 min.: 8.0
Key Properties:
Outstanding adhesion, low neck-in, good clarity, excellent heat sealability, moisture barrier and drawdown
Applications:
General purpose, Kraft paper, food board coating, flexible packaging, foil laminations
FDA Status Met: 21CFR 177.1520(c)2.1
Nominal Melt Temperature Range: 575-620F

NA 204:
Density g/cm 3: .918
Melt Index g/10 min.: 7.0
Key Properties:
Capable of being processed to 5-6.0 lbs coating weight at 1200 ft/min. or higher with minimum neck-in
Applications:
General purpose flexible packaging, foil mouunting and lamating
FDA Status Met: 21CFR 177.1520(c)2.2
Nominal Melt Temperature Range: 575-620F

NA 205:
Density g/cm 3: .924
Melt Index g/10 min.: 3.0
Key Properties:
Passes all requirements of Military Specification B-121B, even at very low coating weights, very good grease resistance
Applications:
Coating porous and non-porous substrates and milk carton
FDA Status Met: 21CFR 177.1520(c)2.2
Nominal Melt Temperature Range: 575-620F

NA 206:
Density g/cm 3: .918
Melt Index g/10 min.: 13
Key Properties:
A high speed, lightweight coating resin capable of low coating weights at line speeds of 1500 ft/min. and higher
Applications:
Locker wraps, sugar pouches, industrial and multi-wall bags and laminations
FDA Statutes Met: 21CFR 177.1520(c)2.1
Nominal Melt Temperature Range: 575-620F

QUANTUM: PETROTHENE Polyolefins for Extrusion Coating(Continued):

PETROTHENE Low Density Polyethylene Resins(Continued):

NA 210:
Density g/cm 3: .924
Melt Index g/10 min.: 3.5
Key Properties:
Offers higher line speeds and lower coating weight, excellent adhesion, good moisture vapor transmission rate (MVTR)
Applications:
Milk cartons and food board coating
FDA Status Met: 21CFR 177.1520(c)2.2
Nominal Melt Temperature Range: 575-620F

NA 211:
Density g/cm 3: .924
Melt Index g/10 min.: 4.5
Key Properties:
Good for highest line speeds and lowest coating weights, excellent adhesion, good MVTR
Applications:
Milk carton and food board coating, Kraft paper laminating, flexible packaging
FDA Status Met: 21CFR 177.1520(c)2.2
Nominal Melt Temperature Range: 575-620F

NA 212:
Density g/cm 3: .915
Melt Index g/10 min.: 12.0
Key Properties:
Excellent drawdown, low neck-in, good appearance and heat sealability, good moisture barrier; can be used at high line speeds and low coating weights
Applications: Coating Kraft paper and polymer films, sugar pouch stock
FDA Status Met: 21CFR 177.1520(c)2.1
Nominal Melt Temperature Range: 575-620F

NA 215:
Density g/cm 3: .923
Melt Index g/10 min.: 4.5
Key Properties:
High speed, medium weight coating resin developed as an intermediate between NA 216 and NA 217. Can yield 5.0-6.0 lb coating weights at line speeds of 1200 ft/min or higher
Applications:
Flexible packaging, milk cartons, food boards, set-up cartons, industrial papers and foil mounting
FDA Status Met: 21CFR 177.1520(c)2.2
Nominal Melt Temperature Range: 575-620F

QUANTUM: PETROTHENE Polyolefins for Extrusion Coating(Continued):

PETROTHENE Low Density Polyethylene Resins:

NA 216:
Density g/cm 3: .923
Melt Index g/10 min.: 3.7
Key Properties:
A general purpose, heavy and medium coating weight resin capable of coating weights down to 8.0 lb at line speeds of 1200 ft/min. or higher
Applications:
Flexible packaging, milk cartons, set-up cartons and food boards
FDA Status Met: 21CFR 177.1520(c)2.2
Nominal Melt Temperature Range: 575-620F

NA 217:
Density g/cm 3: .923
Melt Index g/10 min.: 5.5
Key Properties:
High speed, lightweight coating version of NA 215 and NA 216, capable of 4.0-5.0 lb. coating weights at speeds of 1200 ft/min. or higher
Applications:
Flexible packaging, foil mounting, milk cartons, food boards and industrial papers
FDA Status Met: 21CFR 177.1520(c)2.2
Nominal Melt Temperature Range: 575-620F

PETROTHENE Medium Density Polyethylene Resins:

NL 405:
Density g/cm 3: .935
Melt Index g/10 min.: 5.2
Key Properties:
Outstanding barrier properties, good processability, good neck-in, high drawdown, good adhesion and sealability
Applications:
Barrier and multiwall bags, boilable packages
FDA Status Met: 21CFR 177.1520(c)2.2
Nominal Melt Temperature Range: 575-620F

NL 409:
Density g/cm 3: .936
Melt Index g/10 min.: 10.2
Key Properties:
Excellent processability, outstanding barrier properties, low neck-in, good drawdown, good adhesion and heat sealability
Applications:
Flexible packaging
FDA Status Met: 21CFR 177.1520(c)2.2
Nominal Melt Temperature Range: 575-620F

QUANTUM: PETROTHENE Polyolefins for Extrusion Coating(Continued):

PETROTHENE High Density Polyethylene Resins:

SN 553:
Density g/cm 3: .945
Melt Index g/10 min.: 8.3
Key Properties:
Outstanding barrier properties, good processability, good neck-in, high drawdown, good adhesion and sealability
Applications:
Construction papers, barriers
FDA Status Met: 21CFR 177.1520(c)2.2
Nominal Melt Temperature Range: 575-620F

SN 556:
Density g/cm 3: .949
Melt Index g/10 min.: 10.1
Key Properties:
Outstanding barrier properties, good processability, good neck-in, high drawdown, good adhesion and stability
Applications:
Construction papers, barriers
FDA Status Met: 21CFR 177.1520(c)2.2
Nominal Melt Temperature Range: 575-620F

ULTRATHENE Ethylene Vinyl Acetate Copolymers:

PE 3050:
18% Equiv. VA
Density g/cm 3: .93+
Melt Index g/10 min.: 30
Key Properties:
Formulated with an additive for chill roll release and slip to minimize, and in most cases eliminate, the need for starch. Several slip levels are available. Can be processed at low coating weights at line speeds of 600 ft/min. or higher.
Applications:
Coatings on polyester, cellophane and polypropylene film for cheese wrap and other critical applications, document sealing
FDA Status Met: 21CFR 177.1350 and 176.170. Conditions of Use E, F, & G
Nominal Melt Temperature Range: 400-450F

QUANTUM: PETROTHENE Polyolefins for Extrusion Coating (Continued):

PE 3060:
15% Equiv. VA
Density g/cm 3: .93+
Melt Index g/10 min.: 30
Key Properties:
Medium heat sealability at low heat seal temperatures. Capable of lightweight coatings down to 3.0 lb at line speeds of 600 ft/min or higher
Applications:
Coatings on polyester and biaxially-oriented polypropylene film; cheese packaging and other critical applications; document sealing
FDA Status Met: 21CFR 177.1350 and 176.170, Conditions of Use E, F & G
Nominal Melt Temperature Range: 400-450F

PE 3304:
28% Equiv. VA
Density g/cm 3: .95
Melt Index g/10 min.: 6.0
Key Properties:
Tie-layer in coextrusion coatings; replacement for chemical primers
Applications:
Cheese wrap, medical packaging and other critical applications
FDA Status Met: 21CFR 177.1350 and 176.170, Conditions of Use E, F & G
Nominal Melt Temperature Range: 400-425F

UE 632:
15% Equiv. VA
Density g/cm 3: .934
Melt Index g/10 min.: 8.2
Key Properties:
Good heat seal response, low heat seal range, good clarity
Applications:
Coatings on cellophane, polypropylene and polyester
FDA Status Met: 21CFR 177.1350 and 176.170, Conditions of Use E, F & G
Nominal Melt Range: 400-450F

QUANTUM: PETROTHENE Polyolefins for Extrusion Coating(Continued):

ULTRATHENE Ethylene Vinyl Acetate Copolymers(Continued):

UE 633:
19% Equiv. VA
Density g/cm 3: .938
Melt Index g/10 min.: 20.0
Key Properties:
Good heat seal response, low heat seal range, good clarity
Applications:
Coatings on cellophane, polypropylene and polyester
FDA Status Met: 21CFR 177.1350 and 176.170, Conditions of Use E, F & G
Nominal Melt Temperature Range: 400-450F

UE 635:
9% Equiv. VA
Density g/cm 3: .926
Melt Index g/10 min.: 9.0
Key Properties:
Good heat seal response, low heat seal range, good clarity
Applications:
Coatings on cellophane, polypropylene and polyester
FDA Status Met: 21CFR 177.1350 and 176.170, Conditions of Use E, F & G
Nominal Melt Temperature Range: 400-425F

UE 652:
19% Equiv. VA
Density g/cm 3: .938
Melt Index g/10 min.: 30.0
Key Properties:
Good heat seal response, low heat seal range, good clarity
Applications:
Coatings on cellophane, polypropylene and polyester, cheese wrap
FDA Status Met: 21CFR 177.1350 and 176.170, Conditions of Use E, F & G
Nominal Melt Temperature Range: 400-450F

SCHENECTADY RESINS INC.: SP-6700 Resin:

SP-6700 Resin is a thermoplastic, novolak resin. It does not contain hexamethylene-tetramine (hexa), and it is the base resin used in the manufacture of SP-6600 Resin. It used to eliminate scorch tendencies of high-temperature mill or Banbury mixing.

Characteristics:

SP-6700 Resin is produced for those high-temperature compounding cycles where the early presence of hexa could result in scorching. During rubber compounding cycles, hexa should be added as the last compounding ingredient, and should be added at the end of the mixing cycle.

In Banbury operations, it is often more desirable to add hexa to the stock on the sheet off mill. The quantity of hexa added is dependent on processing conditions and the physical properties desired in the product. With eight percent hexa (the concentration used in the preparation of SP-6600), SP-6700 Resin cures rapidly to a heat-resistant, chemically inert product. This percentage of hexa is the one normally used with nitrile stocks. With three to five percent hexa, SP-6700 Resin cures to a semi-flexible product; the cure rate being somewhat slower than that obtained with SP-6600 Resin. The three to five percent hexa loading is usually used with neoprene stocks.

Typical Physical Properties:

Form: Flake
Melting Point (Ball and Ring), C: 95
Specific Gravity: 1.16

Solubility:

SP-6700 is soluble in alcohols, ketones, and esters.

Applications:

Typical compounding cycles using SP-6700 Resin and hexa in a nitrile stock are as follows:

A. Mill Mixing
B. Banbury Mixing

SCHENECTADY CHEMICALS INC.: SP-6701 Resin:

SP-6701 Resin is a thermoplastic, novolak resin. It does not contain hexamethylene-tetramine (hexa), and is the base resin used in the manufacture of SP-6601 Resin. It is entirely safe to use in high-temperature compounding cycles.

Characteristics:
SP-6701 Resin has good plasticizing properties during processing and thereby aids filler dispersion. It may be stored indefinitely in closed containers at ambient room temperatures.

Typical Physical Properties:
Form: Flake
Melting Point (Ball and Ring), C: 95
Specific Gravity: 1.16

Solubility:
SP-6701 is soluble in alcohols, ketones and esters.

Applications:
SP-6701 Resin is used primarily in SBR stocks where high-processing temperatures are encountered. Due to the high-temperature compounding cycles, the early presence of hexa could result in a premature cure or scorch. The addition of eight percent hexa to this material yields thermosetting properties equal to the SP-6601 Resin. The hexa should be added with the accelerators and sulfur as the last step in the mixing cycle.

SCHENECTADY CHEMICALS INC.: SRF-1501 Resin:

SRF-1501 Resin is intended for use as a resinous resorcinol donor. In combination with methylene donor, it will function as a ply or fabric adhesive in rubber stocks. This patented system* represents an entirely new approach to the problem of bonding across rubber-to-rubber or rubber-to-fabric interfaces during cure. In the particular area of tire construction, it has had spectacular success where its use in skim coats has drastically reduced ply and tread separations during service.

Characteristics:

SRF-1588-A Resin will operate effectively in natural, SBR, IR, BR, NBR or CR. It shows little or no effect in IIR or EPR. Because of its resinous nature, SRF-1501 Resin shows little tendency to sublime or fume during mixing or fabrication, and is not hazardous under proper conditions of industrial use. In rubber stocks, it will not bloom or discolor. However, a slight tendency to retard cures has been noted.

Typical Physical Properties:

Form: Flake
Melting Point (Ball & Ring), C: 105
Specific Gravity: 1.37
Viscosity (Gardner-Holdt, 70% aqueous solution): V
pH (70% aqueous solution): 4.5

Compounding:

The adhesive properties of SRF-1501 Resin are developed through its reaction with the methylene donor, such as Bonding Agent M-3, a product of Naugatuck Chemicals. This reaction occurs quite rapidly at rubber curing temperatures and must be taken into account during copmpounding or processing. If reaction occurs before cure, the bonding capability of the system will be lost.

At temperatures below 200F, the resin and the methylene donor may be dispersed together as a last step. Care must be taken, however, to dissolve the resin thoroughly in the compound. At higher temperatures, a two-stage mixing cycle is preferred. Generally, a masterbatch of the rubber, fillers and resin is prepared during the first stage. In the second stage, just prior to dumping, the methylene donor and curatives are added.

Application:

Suggested ratio is from 2 to 4 parts of the resin on 100 parts RHC. This amount of resin will require from 1.0 to 1.5 parts of the methylene donor. It must be emphasized that the resin will not function as an adhesive unless the methylene donor is present.

SCHENECTADY CHEMICALS INC.: SRF-1524 Resorcinol Resin:

SRF-1524 Resorcinol Resin is particularly formulated for use with SBR Latex, Type IV, or similar polymers.

Characteristics:
SRF-1524, a resorcinol-formaldehyde resin, is a cherry-red liquid.

Typical Properties:
Solids (1 hr. at 260F), %: 75
Specific Gravity at 25C: 1.250
Weight Per Gallon: 10.4
Viscosity (Gardner-Holdt) @ 25C: Z1-Z2 1/2
Viscosity (Centipoises, Brookfield) at 25C: 3000-5000
Solvent: Water

Application:
The major application for SRF-1524 Resin is in tire cord dip solution, especially rayon and nylon cord for SBR carcass.

Typical Tire Cord Dip (Rayon or Nylon to SBR)

Part A:
Resin Solution at 75% Solids: 4 grams
1.5% Sodium Hydroxide Solution: 5 cc
Ammonium Hydroxide (26 Baume): 5 cc

Dilute 25 cc's with water. *

(*) In some locations use of deionized or distilled water may be necessary.

SHUMAN PLASTICS, INC.: Plastics Resins Product Line:

Thermoplastic Compounds:

ABS:
- SHUMAN 710 - Utility Black - 4.0 Izod
- SHUMAN 720 - Jet Black - 4.0 Izod
- SHUMAN 730 - White - 4.0 Izod
- SHUMAN 740 - High Gloss Black - 2.5 Izod
- SHUMAN 780 - Black, Flame Retardant ABS/PVC - 8.0 Izod - UL Approved
- SHUMAN 790 - Black, Flame Retardant - 4.0 Izod - UL Approved - All Colors
- SHUMAN 7020 - Black - 2.5 Izod - Pipe Extrusion Grade
- SHUMAN 7040 - Black - 4.0 Izod - Pipe Extrusion Grade
- SHUMAN 7050 - Black - 5.0 Izod - Pipe Extrusion Grade

Polycarbonate:
- SHUMAN 900 - Clear - Minimum 12.0 Izod - UL Approved - All Color
- SHUMAN 910 - Standard Black - Minimum 12.0 Izod - UL Approved - All Color
- SHUMAN 920 - Jet Black - Minimum 12.0 Izod - UL Approved - All Color
- SHUMAN 930 - White - Minimum 12.0 Izod - UL Approved - All Color

Polyethylene:
- SHUMAN 601 - Black - .3-.8 Melt Flow - .944-.955 Density - Extrusion Grade
- SHUMAN 603 - Black - 5-18 Melt Flow - .955-.960 Density - Injection Grade

Polypropylene:
- SHUMAN 502 - Black Copolymer - 4-10 Melt Flow
- SHUMAN 503 - White Copolymer - 4-10 Melt Flow
- SHUMAN 510 - Black Homopolymer - 5-10 Melt Flow
- SHUMAN 530 - White Homopolymer - 5-10 Melt Flow

Polystyrene:
- SHUMAN 810 - Black High Impact - 1.6 Minimum Izod - UL-94HB - All Colors
- SHUMAN 811 - Black Medium Impact - 1.2 Maximum Izod - UL-94HB - All Colors
- SHUMAN 830 - White Medium/High Impact - 1.3 Maximum Izod - UL-94HB - All Colors
- SHUMAN 860 - White/Black/Grey - Copolymer - 2.8 Izod